TRANSPARENCY INTERNATIONAL-PAKISTAN

5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII,
Defence Housing Authority, Karachi.
Tel: (92-21)-35390408, 35390409, Fax: 35390410
E-mail: ti.pakistan@gmail.com
Website: www.transparency.org.pk

18th June, 2016

Honorable Justice Anwar Zaheer Jamali,,
Chief Justice of Pakistan,
Supreme Court of Pakistan,
Islamabad.

Attn: Human Rights Cell

Sub: Allegation of misuse of power by NEPRA and Ministry of Water & Power in Coal Power, Gas Power and Solar Power Projects in last 10 years costing illegal benefit given to IPPs of over Rs 200 billion/annum, and Rs 6,000 Billion in 30 years.

Dear Sir,

Transparency International Pakistan has been occasionally intimating NEPRA, Ministry of Water & Power and also copying its letters on the subject to NAB since June 2013 on the allegation of misuse of power by NEPRA and Ministry of Water & Power in Coal Power, Gas Power and Solar Power Projects which allows illegal benefit IPPs in Electricity Tariff.

On 9th June 2016, a complaint was sent to the Director General NAB, Karachi vide letter No TL16/06/1B in which the allegations of over 40% higher tariff given to IPPS by NEPRA & Ministry of Water & Power since 2013, which has caused costliest electricity to consumers, giving extra and illegal benefit to IPPs which may be over Rs. 200 billion/annum, and Rs 6,000 Billion in 30 years. **Annex-A.**

1. In case of alleged illegal revision of the Coal Power Plants Tariff petition NEPRA ignored TI Pakistan request and issued revised Tariff on 26.6.2014, which has increased the benefits to IPPs by tariff increase of Rs 1.5/KWH, as well as guaranteed tax free profit from 17% revised to 27% for 30 years, and capital cost increase of 35% to 40 %. Kindly note that only 3 NEPRA Members decided the NEPRA/TRF-261/SSPPL-2014/3993-3995 on April 22, 2014 , whereas , at least 3 board members plus Chairman shall be available to take decision on tariff petitions.

2. In M/s Lalpir and M/s Pakgen coal tariff petitions, Whistleblower Pakistan sent an objection to NEPRA on 1.12.2014, asking the IPP must carry out of a study to determine that fuel conversion of their old Plant is more feasible as compared to the installation/commissioning of a new Power Plant, to show whether the investment of Lalpir& Pakgen Power in the proposed conversion of an in-efficient Plant are more feasible than commissioning of a new Power Plant keeping, and that in view the fact that such conversion is not adding any capacity in the system there is no issue of availability of Generation capacity in the country and the only issue is affordability. If the answer is 'yes', then why high cost Wind, Solar and RFO Generation is being approved/considered by the Regulator. But NEPRA did not entertain this request of Whistleblower Pakistan.
3. One collusion between NEPRA and PQEPCPL Coal Power Plant IPP was reported by TIP to NEPRA on 12.9.2015 and again on 4.2.2016 , about over charging of Tariff in 30 years caused extra payment to IPP **Rs. 51.7 billion** at 100% efficiency, but NERPRA did not take any action on this complaint. .

4. In case of Solar Power Plants, on 24th May 2016, TI Pakistan sent a letter to the Chairman NAB highlighting few frauds committed by NEPRA on Sola rand Gas Power Plants. It was on the allegation of Illegal Grant of Revision in Feb 2016, of about 32% to 37% increase in Tariff of Solar Power Plants to **15 cents**/MWH by Collusion of NEPRA and few officers of Govt. of Pakistan to M/s Blue Star Hydel Pvt. Ltd.; M/s Buksh Solar Pvt. Ltd. and M/s Safe Solar Pvt. Ltd, giving additional benefit of over Rs. 100 billion at cost of general public. NAB did not took any action yet.

5. The Honorable Court is to note that NEPRA allowing tariff of **15-17 cents**/KWH in Quaid Azam Sloar Park also needs to be investigated as the recent award of Solar Power Project is the Emirate of Dubai Project awarded in May 2016,, which set a new world record for the cost of solar power on with the Dubai Electricity and Water Authority (DEWA) receiving bids for the 800 MW Sheikh Maktoum Solar Park Phase III as low as **3** cents per kilowatt-hour (kWh). It is apprehended that Solar Power Plant Tariff approved by NEPRA are 50% higher than market, and on 1,000 MW in 20 years IPPS will make extra profit of **Rs 500 billion**.

6. In case of Wind Power Plants A systemic manipulation has been done by AEDB and NEPRA in Wind Power Plants. Construction as reported by Business Recorder on 14.10.2013. Contract or EPC (Engineering Procurement and Construction – 'turnkey' project) EPC Contract involves procurement of Energy Equipment (wind turbines), setting it up on Site then commissioning of the project. Individually turbines cost around $47-$50 million, civil costs are around $8-$9 million and another $8 million are for setting up the electrical substation and transmission lines inside the site. These add up to $63-$67 million. EPC contractors charge another few million to cover their risks but the total Final "fully loaded" **EPC cost should come to around $75 million**. The projects show their total EPC cost as **$105-$111 million**. The difference between the actual cost and the submitted cost is typically recouped. Project Company and the EPC contractor have a Contract that is submitted to the regulators and bankers and creditors that shows the amount shown higher amount. **And there is a second contract a typical side letter arrangement that provides the split of the recoup back to the Project Company and tech contractor**. On 600 MW Wind power plants additional benefit of **Rs 50 billion/annum** or Rs 1000 billion in 20 years, has been given to IPPs by NEPRA and AEDB.

7. The case of Tariff determination by NEPRA in Gas Fired Power Plants has been proved collusive by the Government of Pakistan tenders in recent 3,600 ME RLNG Tenders. Chairman NAB was informed by TIP on 24 May 2016 that NEPRA has also allowed 80% to 100% capital cost in Gas Fired Power Plant in 2015. In the RLNG-based projects which involved engineering, procurement and construction cost (EPC) of $791,000 per megawatt for private sector projects, the Government of Pakistan under the supervision of Mr. Shehbaz Sharif, CM Punjab decided to hold competitive resulting in finalization of EPC contracts on less than $475,000 per MW for projects at Guddu, Bhikki and Havelli Bahadur Shah for 1,200 MW each. Net saving declared by the Prime Minister in capital cost to GoP is over Rs.105 Billion, and in 30 years, lower traffic will benefit consumers Rs 500 billion. NEPRA in previous IPPs approved US $ 750,000 to 2/3 Gas Powered IPPs needs to be investigated, as on 1000 MW of such plants, extra profit allowed to IPPS by NEPRA runs into over Rs 30 billion/annum or Rs 900 billion in 30 years.

My Lord, in the RPP case, on 19th November 2010, the Supreme Court has asked private power companies to submit their responses by December 6 on allegations of massive corruption in rental power projects leveled by the Transparency International in one of its reports. **Annex-B.**

In the Order dated 30.3.2012 in the Alleged Corruption in Rental Power Plants etc (2012 SCMR 773, the Honorable Court has given following remarks on Ministry of Water & Power and NEPRA.

> *(vii)The RPPs mode of generation of electricity has proved a total failure and incapable of meeting the demand of electricity on a short term basis. The cost of electricity so produced is on very high side and is not commensurate with the provisions of section 7 of the Act, 1997.*
>
> *(viii) It is the constitutional requirement that every action of Governmental authorities should be aimed at socioeconomic development of the country. In terms of on situation and Act, 1997, the NEPRA is mandated to safeguard the interests of the consumers, but the concerned officials of NEPRA failed to perform their duties diligently;*

Transparency International Pakistan feels that the NEPRA in terms of Act, 1997, the NEPRA is mandated to safeguard the interests of the consumers, but the concerned officials of NEPRA failed to perform their duties diligently, NEPRA & Ministry of Water and Power with connivance with few IPPA have caused colossal loss to consumers.

An indulgence of the Honorable Court in the matter of public interest is prayed for.

Transparency International Pakistan is striving for across the board application of Rule of Law, which is the only way to stop corruption.

Yours Obediently,

Syed Adil Gilani
Adviser

Encl; Annexes, A and ,B.

ANNEXURE-A

TRANSPARENCY INTERNATIONAL-PAKISTAN

5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII,
Defence Housing Authority, Karachi.
Tel: (92-21)-35390408, 35390409, Fax: 35390410
E-mail: ti.pakistan@gmail.com
Website: www.transparency.org.pk

TL16/06/1B

9 June, 2016 2016
Director General NAB,
National Accountability Bureau,
Karachi,

Sub: Allegation of misuse of power by NEPRA and Ministry of Water & Power in Coal Power, Gas Power and Solar Power Projects in last 10 years costing illegal benefit given to IPPs of over Rs 200 billion/annum, and Rs 6,000 Billion in 30 years.

Dear Sir,

Transparency International Pakistan has noted from the newspaper about the allegation of Corruption in award process of determining Tariff by NEPRA and Ministry of Water & Power in Coal Power, Gas Power and Solar Power Projects in last 10 years, which might cause extra annual burden to public of over Rs 200 billon, and illegal benefit to IPPS Owners..

Following were the allegations published in Newspapers and are being submitted to NAB;

Coal Power Plants.

1. On 30 June 2013, NEPRA has announced upfront tariff for Coal Power Plants.
2. While paying the Circular Debt of Rs 460 billion in June 2013, Ministry of Finance signed MoUs with Hubco, (1,292 MW) Lalpir, (362 MW) Pakgen, (365 MW) Saba (134 MW) power plants under which they were bound to convert their plants from furnace oil to coal within 24 months.
3. In order to make extra profit a scheme was prepared by MoW&P, and to dole out billion of rupees benefit to Hubco, Lalpir, Pakgen, (later on Siafur Rehman sponsored 1320 MW PQA Plant and KESC also benefited on the revion) on 11.2.2014 Secretary MoW&P requested NEPRA to jack up Tariff of Coal Power Plants, by 20%, by increase in Capital Cost by 30-40-%, Guaranteed Profit Tax free for 30 years from 17% to 27%, etc. **Annex-A**. Please note that Hubco, Lalpir, Pakgen had agreed to set up Coal Power Plants on 2013 Tariff and that the plants will be converted in 24 months, i.e. by June 2015.
4. TI Pakistan sent objections to NEPRA on 26.5.2014 for illegal act committed by MoW & Power, requesting NEPRA not to consider the enhancement which is against the public interest. **Annex-B.**
5. NEPRA ignored TI Pakistan request and issued revised Tariff on 26.6.2014, which has increased the benefits to IPPs by tariff increase of Rs 1.5/KWH, as well as guaranteed TAX free profit of 27% for 30 years, and capital cost increase of 35% to 40 %. Kindly note that only 3 NEPRA Members decided the revision, whereas it is all 5 members shall be available to take decision on Tariff. **Annex-C**.
6. Ministry of Water and Power Secretary Saifullah Chatha himself pleaded the case with the NEPRA during a public hearing of the authority, against the provisions of NEPAR Act, Rule and regulations.
7. Lalpir, Pakgen and K Electric old RFO power plants have outlive their commercial lives, and were almost closed, and on pretext of fuel shortage were illegally getting capacity payments needed replacement by the IPPs. But GoP and NEPRA allowed illegal favor, and though the MoU signed plants were to be set up in 24 moths, they were allowed 36 months construction period. Though 17% ROE is allowed on these

plants, and tariff allowed is 7.162 Cents/KWH , which is more than tariff of RFO Plants as well as GAS plants, and no additional power will be added into the national grid.

8. On Lalpir coal tariff petition, Whistleblower Pakistan sent an objection to NEPRA on 1.12.2014, asking the Lalpir must carry out of a study to determine that there is no issue of availability of Generation capacity in the country and the only issue is affordability. If the answer is 'yes', then why high cost Wind, Solar and RFO Generation is being approved/considered by the Regulator. **Annex-D**. But NEPRA did not entertain this request of Whistleblower Pakistan.
9. On about 4,000 MW Coal Plants, additional annual earning will be Rs. 50 Billion. This means in 30 years Rs 1,500 billion will be earned extra from public.
10. One collusion between NEPRA and PQEPCPL Coal Power Plant IPP was reported by TIP to NEPRA on 12.9.2015 and again on 4.2.2016 , about Over charging of Tariff in 30 years caused extra payment to IPP **Rs. 51.7 billion** at 100% efficiency. **Annex-E**

Solar Power Plants.

11. On 24th MAY 2016, TI Pakistan sent a letter to Chairman NAB on one of few frauds committed by NEPRA on Solar Power Plants. It was on allegation of Illegal Grant of Revision of about 32% to 37% in Tariff of Solar Power Plants by Collusion of NEPRA and Few Officers of Govt. of Pakistan M/s Blue Star Hydel Pvt. Ltd.; M/s Buksh Solar Pvt. Ltd. and M/s Safe Solar Pvt. Ltd, Giving Additional Benefit of over Rs 100 Billion at Cost of General Public. **Annex-F.**

12. NEPRA allowing tariff of 15-17 cents/KWH in Quaid Azam Sloar Park also needs to be investigated along with above illegal act of favor to M/s Blue Star Hydel Pvt. Ltd.; M/s Buksh Solar Pvt. Ltd. and M/s Safe Solar Pvt. Ltd . The recent award of Solar Power Project is the Emirate of Dubai Project awarded in May 2016,, which set a new world record for the cost of solar power on with the Dubai Electricity and Water Authority (DEWA) receiving bids for the 800 MW Sheikh Maktoum Solar Park Phase III as low as **3.00 U.S. cents per kilowatt-hour (kWh)**.

13. It is apprehended that Solar Power Plant Tariff approved by NEPRA are 50% higher than market, and on 1,000 MW in 20 years IPPS will make extra profit of Rs 500 billion.

Wind Power Plants

14. A systemic manipulation has been done by AEDB and NEPRA in Wind Power Plants. Construction as reported by Business Recorder on 14.10.2013. **Annex-G.**

15. Contract or EPC (Engineering Procurement and Construction – 'turnkey' project) EPC Contract involves procurement of Energy Equipment (wind turbines), setting it up on Site then commissioning of the project. Individually turbines cost around $47-$50 million, civil costs are around $8-$9 million and another $8 million are for setting up the electrical substation and transmission lines inside the site. These add up to $63-$67 million. EPC contractors charge another few million to cover their risks but the total Final "fully loaded" EPC cost should come to around $75 million.

16. The projects show their total EPC cost as $105-$111 million. The difference between the actual cost and the submitted cost is typically recouped. Project Company and the EPC contractor have a Contract that is submitted to the regulators and bankers and creditors that shows the amount shown higher amount. And there is a second contract a typical side letter arrangement that provides the split of the recoup back to the Project Company and tech contractor, the sources added.

17. On 600 MW Wind power plants additional benefit of Rs 50 Billion/annum has been given to IPPs by NEPRA and AEDB.

Gas Fired Power Plants.

18. Chairman NAB was informed by TIP on 24 May 2016 that NEPRA has also allowed 80% to 100% capital cost in Gas Fired Power Plant in 2015. In the RLNG-based projects which involved engineering, procurement and construction cost (EPC) of $791,000 per megawatt for private sector projects, the Government of Pakistan under the supervision of Mr. Shehbaz Sharif, CM Punjab decided to hold competitive resulting in finalization of EPC contracts on less than $475,000 per MW for projects at Guddu, Bhikki and Havelli Bahadur Shah for 1,200 MW each. Net saving declared by the Prime Minister in capital cost to GoP is over Rs.105 Billion, and in 30 years, lower traffic will benefit consumers Rs 500 billion. .

19. NEPRA in previous IPPs approved US $ 750,000 to 2/3 Gas Powered IPPs needs to be investigated, as on 1000 MW of such plants, extra profit allowed to IPPS by NEPRA runs into over Rs 30 Billion/annum.

TI Pakistan requests the DG NAB, Karachi to examine the complaint, which prims facie appears to be similar to the corruption cases of Rental Power Projects of 2006 and 2008/9, and take notice of these allegations of corruption of over Rs 2000 billion, and if the complaint is found correct, all these illegal acts may be reverted back, and action may be taken against all those who are responsible for the mis-use of authority for private gain, under NAO 1999, Section 9.

Transparency International Pakistan is striving for across the board application of Rule of Law, which is the only way to stop corruption.

Regards,

Sohail Muzaffar,

Encl; Annexes, A ,B. C, D, E and F

Copies forwarded for the information with request to take action under their mandate to:

1. Secretary to Prime Minister, Islamabad.
2. Chairman, NAB, Islamabad.
3. Chairman, PMIC, PM Secreraytite, Islamand
4. Registrar, Supreme Court of Pakistan, Islamabad.

Annex – A

No. SECY (W&P) / MISC- 2014
GOVERNMENT OF PAKISTAN
MINISTRY OF WATER AND POWER
*****

Secretary
Tele 9202335

Islamabad, the 11 February 2014.

Mr. Khawaja Muhammad Naeem
Vice Chairman
National Electric Power Regulatory Authority
Islamabad

Subject: **RECONSIDERATION REQUEST/ MOTION FOR REVIEW, UNDER SECTION 31(4) OF THE NEPRA ACT, 1997 READ WITH RULE 16(12) OF NEPRA (TARIFF STANDARDS & PROCEDURE) RULES, 1998 AND REGULATION 3(2) OF NEPRA (REVIEW PROCEDURE) REGULATIONS 2009, OF THE UPFRONT TARIFFS DETERMINED BY NEPRA ON 6th JUNE 2013 FOR COAL BASED POWER GENERATION**

Diary No. 2276
Date 12-2-14

This has reference to NEPRA Order No. NEPRA/TRF-100/UTC/5444-5446 dated 6th June 2013 vide which NEPRA announced Upfront Tariff for coal based projects.

2. Your attention is invited to Section 31(4) of the Regulation of Generation, Transmission and Distribution Act 1997 (the NEPRA Act) which provides as follows;

> *"Notification of the Authority's approved tariff, rates, charges, and other terms and conditions for the supply of electric power services by generation, transmission and distribution companies shall be made, in the official Gazette, by the Federal Government upon intimation by the Authority:*
>
> *Provided that the Federal Government may, as soon as may be, but not later than fifteen days of receipt of the Authority's intimation, require the Authority to reconsider its determination of such tariff, rates, charges and other terms and conditions. Whereupon the Authority shall, within fifteen days, determine these anew after reconsideration and intimate the same to the Federal Government;"*

3. The Authority's attention is also drawn to Regulation 3(2) of the NEPRA (Review Procedure) Regulations, 2009 which states:

> *"Any party aggrieved from any order of the Authority and who, from the discovery of new and important matter of evidence or on account of some mistake or error apparent on the face of*

record or from any other sufficient reason, may file a motion seeking review of such order".

4. Initially, the MoWP expected that the announcement of upfront tariff on coal would attract the private sector investment in Coal based Power Generation Plants in Pakistan. Nonetheless the investors based on their market due diligence gave feedback to the MoWP/Federal Government that IPP projects opting for the above determined Upfront Tariffs would not be commercially viable. Interactions with different investors have shown that following items need to be rationalized for viable investment in coal based Power Generation Projects.

i). Reconsideration of Per Megawatt Capital Cost of the Project
ii). Realistic Readjustment of Net Thermal Efficiency
iii). Reconsideration of Fixed & Variable Operation and Maintenance (O&M) Cost
iv). Change in the Plant Factor of coal based power generation projects

5. The outcome of the feedback given by private sector investors suggests that capital costs as assumed by NEPRA for 660MW unit are on the lower side. While comparable gross capital cost for plants manufactured in Europe and America would range between US$ 2-3 million per megawatt, even that based on the Chinese manufactured power plants would not cost lower than US$ 1.45-1.70 million per megawatt.

6. After interactions with investors, the Ministry of Water and Power has concluded that for Super Critical Coal Power Plants net efficiency of even 42% or above is technically achievable, but the capital costs for such plants would be prohibitive, even higher than the figures mentioned above. It can be established that net thermal efficiency in the range of 39% may be a pragmatic trade-off in view of consumer affordability.

7. As regards Operations and Maintenance (O&M) tariff, the data collected by Ministry of Water & Power indicates a range of Rs. 0.60 to 0.65 per kWh based on 84% plant factor. The O&M cost for 1000 MW plants, however, can be reduced slightly, perhaps by approximately 5 paisa/kwh. However, the O&M costs for plants in the range of 200 MW has to be increased substantially, perhaps to the level of Rs 1/kwh at 84% plant load factor (PLF).

8. The notional figure of 60% Plant Factor calculated for the upfront tariff of coal based power generation may be reconciled to the expected actual capacity utilization of the plant, which would be higher than 60%. The aforementioned request for reconciliation of the Plant Factor to the level of expected actual capacity utilization will still be notional but will reduce the determined upfront tariff ceteris paribus. Since coal plants are inherently the base load plants; expected to run throughout the year, the experts suggest adoption of plant factor of 84% for a coal based power generation plant so that the unit rate of electricity gets calculated based on actual usage expected out of such plants.

9. Your attention is also invited to the fact that NEPRA allows 'return on equity during construction (ROEDC)' and 'withholding tax' on dividends as a standard part of its tariff determination. However, these two items are missing in the subject Upfront Tariff. Given that the coal based power plants take 3-4 years as construction period, denying ROEDC will make the equity returns completely off market. Likewise, denying provision for Withholding Tax deduction on payment of dividends would reduce the promised IRR on equity.

10. Keeping in view the above, the Federal Government under first proviso to Section 31(4) of the NERPA Act, requires the Authority to reconsider the 6th June 2013 Upfront Tariff Determination for Coal Based Power Generation Projects. Detailed grounds and facts forming basis and rationale for reconsideration of the upfront tariff for coal based power generation are attached herewith at **Annex-A**.

11. It is requested that fifteen-days' time limit for the reconsideration request as stipulated under Section 31(4) of NEPRA Act be condoned on the ground that:

> **It was expected that the Upfront Tariff determined by NEPRA on 6th June, 2013 for coal based power generation would attract private sector investment in such power plants, however, the said Upfront Tariff for the coal based power plants failed to attract any investment proposal and the objective of the Federal Government to overcome energy crisis, reduction in energy basket price, improvement in fuel mix through reducing reliance on furnace oil/diesel on fast track basis is not likely to be materialised as envisaged in the Power Policy 2013 duly approved by the Council of Common Interests (CCI).**

12. The only way to improve the power mix in the shortest possible time is addition of power generation through coal in the national grid. The Federal Government will appreciate if the existing Upfront Tariff determined by NEPRA on 6th June 2013 for coal based power generation is reconsidered and a rational tariff is decided and announced on top priority basis.

Encl: As above alongwith -
Vol–I (Annex 1-3)
Vol–II (Annex 4-7)
Vol–III (Annex 8-10)
Vol – IV (Annex 11-14)

(Saif Ullah Chattha)
11.2.2014

Annex-'A'

GROUNDS AND FACTS FOR REVIEW / RECONSIDERATION OF UPFRONT TARIFF ANNOUNCED BY NEPRA ON 6TH JUNE 2013

Upfront Tariff Determined by NEPRA

On 6th June 2013, the National Electric Power Regulatory Authority ("NEPRA") announced Upfront Tariff for local as well as imported coal based projects. For 660 MW imported coal based power projects on foreign financing, NEPRA determined the tariff as US Cents 7.7784/kWh while considering total project of US $ 768,729,000 (i.e. US$ 1.166 Million / MW) and 42% plant efficiency. Likewise the different per megawatt capital costs and efficiencies are assumed for different sized projects; summary of which is given below:

Description	Local Financing						Foreign Financing					
	200 MW		600 MW		1,000 MW		200 MW		600 MW		1,000 MW	
Coal	Local	Imported	Local	Imp	Local	Imp	Local	Imp	Local	Imp	Local	Imp
Plant Efficiency %	39.5	39.5	42	42	42	42	39.5	39.5	42	42	42	42
Project Cost (Million USD / MW)	1.54	1.54	1.48	1.48	1.34	1.35	1.37	1.37	1.28	1.28	1.16	1.16

2. However the investors have reported that capital, operating & maintenance costs assumed by NEPRA are low and efficiency assumed by NEPRA under various scenarios is high. Ministry of Water and Power based on the feedback of investors have reviewed the capital cost, operation and maintenance costs, efficiency as provided by NEPRA in its tariff determination for upfront tariff for coal based projects and following Grounds /Facts are submitted for reconsideration.

Reconsideration Of Upfront Tariffs For 600 MW Coal Fired Power Projects

CAPITAL COSTS

3. In 2010, United States ("US") Energy Information Administration ("EIA") commissioned an external consultant to develop up-to-date cost and performance estimates for utility-scale electric generating plants for Annual Energy Outlook ("AEO") 2011. This information allowed US EIA to compare the costs of different

power plant technologies on a standardized basis and was a key input enhancement to the National Energy Model System ("NEMS"). For the AEO 2013 development, EIA commissioned the same consultant group to update the cost and performance estimates for each of the technologies evaluated in the original 2010 study (EIA-Updated Capital Cost Estimate for Utility Scale Electric Generating Plants – April 2013). The focus of the 2013 update was to gather current information on the "overnight" construction costs, operating costs, and performance characteristics for a wide range of generating technologies. The term 'Overnight' has been referred to the cost of project as if no interest were incurred during its construction. It is worth considering that the technology considered for a single unit 650 MW advanced pulverized coal plant is taken as US $ 3,246 /kW i.e. US $ 3.246 million per MW. The Overnight Cost for dual unit advanced pulverized coal power plant of 1300 MW is US $2925/kW[1].

A paper by Synapse Energy Economics Inc dated July 2008 on " Coal - Fired Power Plant Construction Costs by David Schlissel, Alleison and Rachel Wilson[2]" highlights that the estimated costs of building new coal plants have reached $3500 per KW without financing costs and are still expected to increase further. This would mean a cost of well over US $ 2 billion for a new 600 MW coal plant when financing costs are included. The paper illustrates that Duke Energy Carolinas cost estimates for two Cliffside coal fired power projects was $ 2billion as of 2006. Duke announced 47 % increase in cost when project size was reduced to one. They estimated cost of one unit as 1.8 billion $ exclusive of financing costs. The paper also brings out that estimated cost of APM-Ohio 960 MW was estimated at nearly US $ 3 billion without financing.

A document on Projected Costs of Generating Electricity 2010 Edition prepared by International Energy Agency/ Nuclear Energy Agency, Organization For Economic Co-operation And Development[3] ("OECD) clearly states that most coal-fired in OECD countries have overnight investment costs ranging up to US $ 2800 per kilowatt for plants without carbon capture. Plants with carbon capture have 'Overnight' investment costs ranging from US $ 3223 to US $ 6268 per kilowatt.

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[1] Source : Page 6 of United States ("US") Energy Information Administration ("EIA") Report "Updated Capital Cost Estimate for Utility Scale Electric Generating Plants - April 2013" **Annex 1**

[2] **Annex 2**

[3] Projected Costs of generating Electricity, 2010 Edition, IEA NEA **Annex- 3**

Earlier in 2008 AES had completed a Feasibility Study for an integrated jetty and imported coal based power project[4]. on 26th November 2009, NEPRA determined the tariff for 2x660 MW imported coal based power project by AES as US Cents 7.1524/kWh while allowing total project cost of US $820.89 million out of which Jetty Cost was US $188.0 million. Hence without jetty project cost as allowed by NEPRA was US $1632.89 million (i.e. US $ 1.2512 Million / MW) and 38.5% plant efficiency[5].

In 2008, Mitsui also conducted feasibility study for 2x660 MW imported coal based power plant adjacent to AES site. As per the feasibility numbers, Mitsui worked out the tariff as US Cents 9.5/kWh while considering total project cost of US $ 2,563,315,242, out of which US $ 36,300,000 were estimated for sea cranes and other allied marine costs. Hence without marine costs the project was estimated at the cost of US $ 2,527,015,242 (US $1.99144 Million / MW) and 39% plant efficiency[6]. AES and Mitsui costs quoted are excluding the Jetty cost.

Likewise, US Power Consultant has completed the feasibility study[7] for 2x660 MW Power Project at Jamshoro based on super critical technology in Oct 2013. The total cost including EPC, Contractor Charges and Interest During Construction has been estimated as US $ 2290 million i.e. US $ 1.908 Million / MW.

Based on the above data and feed-back provided by number of investors it can be concluded the capital cost for 660 MW unit assumed by NEPRA at US $1.167 million is not market based. While comparable cost estimates based on Western standards would range around US $3 Million/MW, the GOP believes that the primary source of equipment and supplies will be coming out of China for these projects in Pakistan and the costs estimates will be lower, but clearly not as low as US $1.167 Million/MW inclusive of financial and other charges as assumed by NEPRA. Two recent visits and interactions of government delegations with the Chinese companies, and a recently commissioned feasibility study by the Punjab Government for such plants by SEPCO-III of China, estimate EPC part of the cost for a 660 MW project to be around US $ 1.25-1.3 Million/MW. Using this as a base, and using foreign financing, the total cost estimates come out in the range of US $ 1.45 to

[4] Executive Summary of AES is placed at **Annex 4**
[5] NEPRA determined tariff for AES on 26th November 2009 is placed at **Annex -5**
[6] Executive Summary of Feasibility Study conducted by Mitsui is placed at **Annex - 6**
[7] Feasibility Study of Jamshoro 2x 660 MW Power Project is placed at **Annex -7)**

US $ 1.50 Million / MW keeping all other assumption used by NEPRA. The GOP therefore requests reconsideration accordingly.

EFFICIENCY

Historically steam turbine based technology had been the main workhorse of the power generation technology. The efficiency levels achievable in Rankine cycle did not see much improvement until early nineties since the primary focus had been shift to gas turbine technology. Until such time the sizes of individual units rarely exceed 500 MW each and the net power generation efficiencies for such plants were generally in the mid 30 percent range. Since then improvements have been brought in this sector also and today the sizes of large coal plants range from 600 MW up to 800 MW each, while the net plant efficiencies technically achievable are in the range of 38%-40% for routine production and experimental technologies are achieving up to net 42%-43% net efficiencies. In our opinion, Pakistan should only use standard technologies that are in routine production since we do not even have the expertise for basic subcritical coal plants.

For the purpose of explanation of this ground for review, the following terminologies need to be defined first.

i. Gross Plant Heat Rate and Net Plant Heat Rate: The gross plant heat rate is the measure of BTU/KWh (or KJ/kWh) for the total generation of the power plant, measured at the generator terminals of the steam turbine-generator. Net Plant heat rate is the measure of BTU/kWh (or KJ/KWh) based on the net sent out, after consumption of auxiliary load of the plant itself. The difference between the two is the power being consumed by the plant itself and the transformer losses for stepping up the generation before being sent out to the grid. One of the main reasons that the efficiency is normally quoted on a Gross basis is that auxiliary load and the transformer losses are unique to each site and cannot be quoted as standard. NEPRA allows tariff, and the power purchaser pays, based on this net capacity and energy delivered at the high side of the step up transformer terminals. To give an example, if gross plant efficiency is quoted as 41%, then with an auxiliary load of 7%, this translates to a net efficiency of 38%.

ii. HHV and LHV Factor: As a general industry practice, fuels are sold at Higher Heating Value (HHV), which is the measure of total BTUs (or KJs) per unit of weight or volume. However, when fossil fuels are combusted, a certain portion of these BTUs are not available since they are retained as latent heat in the water vapour, and therefore the real energy available is the measured by Lower Heating Value (LHV). The most common way to account for this is that a HHV-LHV factor is applied to the heating value of fuel, in order to come up with the real usage BTUs (or KJs) before taking that as the heat input for determining efficiency of a power plant.

All power equipment is rated on the basis of LHV and gross output at generator terminals of the turbine/ engine generator. Therefore, to say that a plant has "42% efficiency" is insufficient information, unless it is stated whether this is Gross Plant Heat Rate or Net. Also, if there is no separate HHV-LHV factor applied on the fuel itself then the Net Plant heat rate will give an incorrect estimate of fuel used. Since NEPRA rates are based on net plant heat rates and NEPRA allows a HHV-LHV correction factor, we need to ensure that when we talk about efficiency of power plants, we adjust it to Net efficiency at the transformer terminals; otherwise the comparison will be using different assumptions.

iii. Impact of Coal Quality on Efficiency: It is to be mentioned that for the same location, a plant using hard (high calorie) coal can achieve 2% higher efficiency than a plant using sub-bituminous or lignite coal of medium or low heating value. Since we will be using either imported sub-bituminous coal or local/imported lignite, we cannot design at the higher end of the efficiency[3]. It is to be noted that standard efficiency numbers quoted by Chinese manufacturers are based on design of 7000 Kcal/kg coal[4].

iv. Subcritical versus Supercritical: Another matter which requires explanation is the difference between the terms "Supercritical" versus "Subcritical Technology". In layman's terms, the "supercritical" threshold is simply the operating pressure of a boiler, which is approximately 220 bar. Units at or above the 220 bar mark are supercritical while those below

[3] Reference: IEA Coal Advisory Board Report titled 'Power Generation from Coal, placed at Annex-8, page 50

[4] Ibid: page 97

are subcritical. Thermal efficiency is explained by way of a simple example for the purposes of this reconsideration request.

Example: In a steam power plant, the power is generated when superheated steam turns a steam turbine. With some caveats, the more the energy steam can carry, the better the performance. Supercritical pressure is that pressure at which the water converts from liquid form to steam without boiling, i.e., the liquid versus vapour form are indistinguishable. Beyond this point, an increase in pressure does not proportionately increase the latent energy in steam. Nonetheless, it needs to be understood that supercritical plants can also be designed to operate at higher than 220 bar pressure but the incremental reduction in fuel cost may or may not justify the incremental investment. The level that they are actually designed at depends on a lot of other factors, but one of the key factors is the metallurgy of the boiler. So, a supercritical boiler can be designed to achieve a 41% "net efficiency" if a much higher level of capital cost is spent on it, versus a supercritical plant with 38% efficiency that can be built at lower capital cost.

With this exposition, we would like to point out that the current level of 42% "net plant heat rate" provided for the 600 MW power plant upfront tariff implies a gross plant heat rate of over 45%. While this is technically possible, it is still in somewhat experimental stages and is very expensive. Conversely, if we use the standard production modules of 600 MW units being made in China, they operate in the range of 41% gross heat rate; which translates to approximately 38.5% net efficiency.

As per International Energy Agency, Power Generation from Coal 2010 report[10], the average efficiency of all coal plants in the world is approximately 35.1% (gross). However this includes a lot of old plants. According to the same report, the annual average efficiency of new coal plants in 2005 for Germany, UK, USA, Japan, Korea, and Italy was 38%-40%, while that for India, China, Russia, South Africa, and Australia, was in the range of 35%-38% (page 58). A report titled 'International Comparison of Fossil Power Efficiency and CO2 intensity" by ECOFYS dated 2011[11] corroborates this data and adds that the highest efficiencies achieved in the world for coal power are 41% for France and approximately 40% for Nordic countries.

[10] Ibid: page 57
[11] Annex 9

According to EIA report (page 57~59), the average European Efficiency levels were 38% in 2010, while the state- of-the-art technology between 2010 and 2015 is expected to hit a maximum of 45% efficiency (gross), again without regard to the expense of such technology. In last quarter 2013, EnBWs RDK 8 power plant in Germany started up and is considered to be the most efficient coal fired power plant at 46% efficiency. All the data reported is for gross efficiency.

According to Energy Information Administration of the United States government, report, titled "Updated Capital Costs Estimates for of Utility Scale Electricity Generating Plants" of April 2013[12], the average net efficiency of new supercritical plants in the United States is in the range 38.7%. This translates to about of 41%-42% (gross) efficiency; but this comes along with a cost of approximately US $3.2 million/MW for single units and US $2.9 million/MW for double units[13]. According to US EIA "Annual Electric Generator Report" for 2012, the average heat rate is 33.4% (net) for all steam plants, which includes the high efficiency supercritical plants as well. By extension, the new smaller sized coal plants have efficiencies not below 33% and not above the average of 38%.

Plants that are subcritical but reaching high efficiencies, in the USA, are in the range of 36%-37% net efficiency but again costing around US $2.5-$3 million/MW[14]. The average efficiency of coal power plants in the world is 33% and the most efficient is 45%. While the capital cost for the same has not yet been disclosed, but it is estimated to be approximately Euro 4 million/MW based on data from the contractors. Finally, according to the referenced EIA report (page 6) the capital cost is US $5.2 million/MW if Carbon Capture System is included, and the efficiency for such a plant drops down significantly due to the Carbon Capture System's own power needs.

On 31st March 2005, the Gujarat Electricity Regulatory Commission (GERC) issued regulations for Terms and Conditions of Tariff[15] (the GERC Tariff Regulations), including those for coal plants. These regulations show an efficiency of 36.4% (gross) for plants higher than 500MW and 35% (gross) for the plants around 200 MW.

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[12] See Annex 1

[13] Page 6 of ibid

[14] ("A Comparison of PC, CFB and IGCC Technologies for Basin Electric Power Cooperative's Dry Fork Station" by CH2MHill, placed at **Annex 10**)

[15] Annex -11

In China most new power plants being built are supercritical units with gross efficiencies of approximately 41% (or net 38% efficiency). Reportedly there are six Ultra Supercritical plants in construction and two that have gone into operation recently. However, these are still experimental units in China as well and their efficiency levels are slightly lower than the comparable ones mentioned in the West.

Based on the above references and data, from international or governmental agencies, it is clear that supercritical plants reaching gross efficiencies of up to 43%-45%, which translate to net efficiencies of 40%-41% are technically possible, but the same come along at very high capital costs ranging from US $3-$5 million/MW.

We believe that the right level of "net plant" efficiency for the supercritical plants of 600 MW units each has to be balanced with the capital cost that is affordable for Pakistan, and can therefore be based only on standard Chinese modules being made at this level. We believe that level to be 39% at most, which translates to approximately 41%-42% gross efficiency. You may be aware that the Punjab government recently commissioned a feasibility study for such a plant at Sahiwal being done by SEPCO-3. While this report is in finalization stages, the Punjab government has been advised that the achievable net efficiency is 38.5%, which corroborates the views of the Ministry of Water & Power.

While the focus of this section has been primarily on the 600 MW units, we would like to add that:

a. For units up to 1000 MW, the net efficiency can be increased by approximately 1% if the unit size being used is at least 800 MW each, or if two units of at least 600MW are installed at the same place and are integrated for purposes of auxiliary consumption.

b. For small plants in the range of 200 MW, the efficiency ranges are reported to be 33%-37% as per CMD paper titled "Coal Power Technologies"[16]. Also, a report by Massachusetts Institute of Technology's 2007 paper titled "Future of Coal"[17], states subcritical efficiency of 34.3%. Several independent studies from different engineering companies around the world report that. The GERC Tariff Regulations has specified a rate of 35% (gross)[18]. The actual data

[16] Annex 12
[17] Annex 13
[18] See Annex 14

from existing plants, of course, show the numbers to be lower than that since they include older plants as well.

In light of the above, we request that NEPRA revise its upfront tariff efficiency levels for 600 MW units to 39% (net), for 1000 MW plants to 40% (net) and for 200 MW plants to be 36% (net).

OPERATIONS AND MAINTENANCE COSTS

NEPRA has allowed Fixed O&M Cost in the tariff for 600 MW Imported Coal based projects as Rs. 0.2870/kWh (Cents 0.2956) and Variable O&M Costs as Rs. 0.132/kWh (Cents 0.1360/kWh). It adds up to total O&M Cost as Rs. 0.4190/kWh (Cents 0.4815/kWh) using the exchange rate of Rs 97.1 assumed by NEPRA.

In **EIA Report**[19] of April 2013 Fixed O&M costs for 650 MW single unit Advanced Pulverized Coal (PC) plants are estimated as US $ 37.80 /kW/year. This translates into 0.7192 US Cents/kWh at 60% plant factor and 0.5137 Cents/kWh at 84% plant factor and by using the reference Rupee-Dollar parity of 97.1 it works out to be Rs. 0.6983/kWh and Rs. 0.4988 respectively. Similarly the Variable O&M in the same report has been given as US $ 4.47/MWh. This translates to 0.447 cents / kWh and equivalent to 0.4340 /kWh. Against total O&M Cost of Rs. 0.419/kWh (Cents 0.4315/kWh) allowed by NEPRA in Upfront Coal Tariff, the EIA report estimates these costs as Rs. 1.1324/kWh (Cents 1.1662/kWh).

The **GERC Tariff Regulations**[20] stipulate normative O&M Expenses for Lignite based plants as Indian Rupees 1,217,000/MW (2008-09 figures) which translates to US Cents 0.5308/kWh at 60% plant factor. If this number is indexed for inflation @8% per annum it translates to US Cents 0.7222/kWh (Pak Rs. 0.7583 at current Rs/US $ rate of 105).

A **study carried out by CH2MHILL** for Comparison of PC, CFB and ICC Technologies[21] in June 2007 provides Fixed and Variable O&M Costs as US $ 30,100,000 for a 368 MW Power Plant which translate to be US Cents 1.5562/kWh at 60% plant factor and US Cents 1.1116 /kWh at 84% plant factor.

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[19] See Page 6 of Annex I
[20] See Annex II
[21] See Annex III

The aforesaid data indicates a very wide range of annual O&M Costs, however, in the perspective of Upfront Tariff for Coal Projects of 660 MW the various sponsors are of the view that the O&M Cost should be in the range of Rs. 0.60 to 0.65 per kWh based on 84% plant factor.

ROEDC & WITHHOLDING TAX

Twelve (12) IPP projects have been commissioned under Power Policy 2002. NEPRA while determining their tariffs allowed withholding tax @ 7.5 % in all cases in addition to Return on Equity during Construction (ROEDC) period. Details of tariffs earlier determined by NEPRA allowing ROEDC and Withholding Tax are attached at **Annex-14.** However, these two items are missing in Upfront Tariff. Given that these coal plants have construction time of 36 to 48 months, non-provision of ROEDC reduces the equity returns and makes the coal projects less attractive for investors while in reality these projects should be encouraged in order to reduce the overall pool price for power generation.

CHANGE OF PLANT FACTOR FROM 60 % TO 84 %

It is appropriate to change the notional figure of 60% as usually taken on account of PLF to convert the capacity payment into unit pricing. This figure is completely notional and has no bearing on actual payments being made. Such payments being made are based on the actual dispatch of the plants. Since coal plants are inherently the base load plants, expected to run throughout a year, the experts suggest assuming the plant factor of 84% for a coal based power generation plant. It therefore follows that the unit rate should be calculated based on actual usage expected out of such plants. NEPRA has earlier determined tariff for wind, solar and hydro power projects based on plant factor in line with the utilization of these projects depending on the resource availability. It is to be noted that PLF used in GERC Tariff Regulations[22] is 80%. The PLF in Bangladesh is 85%.

Reconsideration Of Upfront Tariffs For 200 And 1000 MW Coal Fired Power Projects

As no investor has indicated interest in the Upfront Tariffs for 200 and 1000 MW Coal Fired Power Projects it is also required to be reviewed so that investors can

[22] See Annexure II

Annex - B

TRANSPARENCY INTERNATIONAL-PAKISTAN

5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII, Defence Housing Authority, Karachi
Tel: (92-21)-35390408, 35390409, Fax: 35390410
E-mail: ti.pakistan@gmail.com
Website: www.transparency.org.pk

26th May , 2014

Mr. Khawaja Muhammad Naeem
Vice Chairman
National Electric Power Regulatory
Authority
Islamabad

Sub: Complaint against allegation of Rs 1.50/unit heavy hike in the upfront tariff of the coal power plants and lucrative incentives/benefits for installation of coal power plants in the country

Dear Sir,

Transparency International Pakistan has received many complaints against NEPRA for approving against the laid down procedures, on the request of Minister for Water & Power Rs 1.50/unit heavy hike in the upfront tariff of the coal power plants and also offered lucrative incentives/benefits for installation of coal power plants in the country.
The complainants have made following allegations;

1. That non of the following parties who were involved in 6 June 2013 with NERPRA had objected on the upfront tariff of the coal power determined by NEPRA.

   M/s ISZAAD Associates, M/s Syed Akhtar Ali Proplan Associates, M/s Engro Power Gen,M/s The Institute of Engineers of Pakistan,M/s National Transmission and Dispatch Company (NTDC),M/s Central Power Purchasing Agency (CPPA),M/s Ettehad Sugar Mills Ltd.,M/s Deptt. of Energy Balochistan, M/s Habib Rafiq (Pvt.) Ltd, M/s Riaz Ahmad & Company, M/s Punjab Power Development Board (PPDB), M/s Thar Coal & Energy Board.

2. That Federal Government was not permitted under law to request NEPRA to review the Tariff for coal power plants notified on 6 June 2013, after 6 months of the notification.
3. That NEPRA has violated its own law as it can not condone the period of 15 days leave of appeal allowed to the Federal Government under Regulation 3(2) of NEPRA (Review Procedure)Regulations 2009. The leave of appeal at any time is only allowed to investors and not government.
4. That the Ministry of Water & Power petition of 11 February 2014 to review the traffic notified on 6 June 2013 should not have been entertained by NEPRA.
5. That NEPRA has jacking up the tariff by about 20% , has fixed an upfront tariff of 8 to 9.67cent per unit for coal power plant of 200MW, while 8 to 9.54cent/unit for a power plant of 600MW, and 8 to 9.11 cent/unit for coal power plant of 1,100MW.
6. That according to Table 8 of a recent report published by Engr. Arshad H Abbasi of SDPI the international project cost is much lower than what NEPRA has now approved.

Table 1: Source - IEA, 2014 "Fossil Fuel Power Generation, pg. 37-38"

Plant Name	Country	Total Capacity	Technology	Efficiency	USD Cost/MW[1]
RWE Power	German	1000	Ultra Super	43.2	1,175

	y		Critical		
Genesee 3	Canada	450	Super Critical	41	1.1
Isogo New Unit	Japan	600	Ultra Super Critical	42	1.8
Younghung Thermal Power Plant	Korea	800	Super Critical	43	0.993
Wangqu 1 and 2	China	600	Super Critical	41	0.58
Jhajjar	India	1320	Super Critical	42	0.78
Adani	India	1320	Super Critical	41.75	1.06

The MOW&P suggested Project Cost in Feb 2014, was 30% to 35% higher than June 2013 NEPRA approved cost.

Project Cost on Foreign Financing		
Capacity	Project Cost on Foreign Financing	
	Announced	Requested by GoP
200 MW	US $ 1.25 Million/MW	US $ 1.60- 1.70 Million/MW
600 MW	US $ 1.17 Million/MW	US $ 1.45- 1.50 Million/MW
1,000 MW	US $ 1.06 Million/MW	US $ 1.35- 1.40 Million/MW

7. The NEPRA has approved capital cost input increase by 39% higher, within 6 month.

Projects cost of 200 MW from US$ 1.25 M to US$ 1.50 M
Projects cost of 600 MW from US$ 1.17 M to US$ 1.45 M
Projects cost of 1000 MW & above from US$ 1.06 M to US$ 1.45 M

8. That in the MoW &P petition dated 6-2-2014, no revision Tariff on Thar Coal was requested. NEPRA has within the same petition also increased Thar Coal Tariff, which is not allowed under NEPRA Law.
9. That NEPRA has allowed the return on equity has been offered at 30.66 percent for Thar coal, which has so far no example in the world," Instead of increasing the efficiency of the coal power plants for generation purposes NEPRA has decreased by 3 percent only to benefit the investors which has now reached at 42 percent.
10. That NEPRA has favored the investors by increasing the return on equity by 10 percent, which on 6-6-2013 was at 17 percent, and in 2014 it has been increased to 27 percent for the imported coal.
11. That the Plant Factor has been increased from 60% to 85%, i,e, a jump of 41.6%.
12. hat instead of increasing the efficiency of the coal power plants for generation purposes, NEPRA has decreased it by 3 percent only to benefit the investors which has now reached at 42 percent.
13. That Water and Power Secretary Saifullah Chatha himself pleaded the case with the authority during a public hearing of the authority, not allowed under NEPAR Act, rule and regulations.
14. That NEPRA is under the NEPRA Ordinance shall announce its determination within 15 days. But it took after more than 100 days, after MOW&P petition dated 11 February 2013, on 20th May 2014, which is an illegal act.

15. That issuing a press release only against a full determination order, is an illegal act by NEPRA. Under Regulation 3(2) o f NEPRA (Review Procedure) Regulations 2009, a full determination has to be announced, which NEPRA has failed till date.
16. That NEPRA has bypassed its procedure and not issued the full determination of tariff document, which most probably is the first time in NEPRA history, may be in order to favour some parties, who are alrady doing 2 Coal Power Plant projects in Thar and already announced setting up 660 MW Coal Power Plants at PQA in April 2014.
17. That the revised Coal Tariff is legally not applicable on plants already approved by government and inaugurated by the Prime Minister prior to 20th May 2014, or those projects which were started in Thar on the 2013 Tariff.

The seventeen issues raised by complaints are sent to the Vice Chairman NEPRA, for the purpose of application of Rules and Regulations by NEPRA, and if NEPRA has violated the Law, then the Press Release and the sheet termed as Annex A, shall be canceled, and all those responsible shall be held accountable for committing a corrupt practice under NAO 1999.

Please not that under Section 9 of NEPRA Act, Chairman, members, staff, experts, consultants, advisors and other employees of the Authority, when acting or purporting to act in pursuance of any of the provisions of this Act or the rules and regulations, shall be deemed to be public servants within the meaning of section 21 of the Pakistan Penal Code, 1860 (Act XLV of 1860).

Kindly note that all POHs (under section 9 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997) are accountable for committing corruption under NAB Law, NAO 1999, Section 9 subsection v, i. in case it is found that they have misused their authority so as to gain any benefit or favour for himself or any other person, or [renders or attempts to render or willfully fails to exercise his authority to prevent the grant, or rendition of any undue benefit or favour which he could have prevented by exercising his authority.

In view of above, Transparency International Pakistan also request the Vice Chairman NEPRA that no undue favour shall be given at the cost of Exchequer in compliance of the Prime Minister declared policy of " Zero tolerance against Corruption".

TI Pakistan is striving to have transparency in procedures and Rule of Law in Pakistan, which is the only way to eliminate corruption and have good governance in country.

Regards,

Sohjal Muzaffar
Chairman

Copies forwarded for information and appropriate action under the mandate vested, to,

1. Secretary to Prime Minister, Islamabad.
2. Mr. Khurshid Shah, Leader of Oposition & Chairman PAC, National Assembly, Islamabad.
3. Chairman, NAB, Islamabad.
4. Registrar, Supreme Court of Pakistan, Islamabad.

Annex-C

National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

NEPRA Tower, Ataturk Avenue (East) G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600021
Web: www.nepra.org.pk, E-mail: info@nepra.org.pk

No. NEPRA/TRF-UTC/2013/7195-7197
June 26, 2014

Subject: **Decision of the Authority regarding Reconsideration Request filed by Government of Pakistan in the matter of Upfront Tariff for Coal Power Projects**

Reference: Ministry of Water & Power letter No. SECY(W&P)MISC-2014 dated 11.02.2014.

Dear Sir,

In continuation to NEPRA's Determination in the matter of Upfront Tariff for the Projects on Imported/Local Coal (Other than Thar Coal) communicated to the Federal Government vide letter No. NEPRA/TRF-100/UTC/5444-5446 dated June 6, 2013, enclosed please find herewith decision of the Authority along with Annex-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 (73 pages) regarding reconsideration made by Ministry of Water & Power in the matter of upfront tariff for Coal Power Projects.

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) 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 56 of the Decision along with Annex-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 needs to be notified in the official Gazette.

Enclosure: As above

(Syed Safeer Hussain)

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

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

Background

1. Government of Pakistan through Ministry of Water & Power (hereinafter referred as "GoP") filed a request dated 11th February, 2014 for reconsideration of the decision of the Authority dated 6th June 2013 regarding upfront tariff for coal power projects. The Authority admitted the reconsideration request on February 26, 2014 and decided to conduct the hearing in the matter on April 09, 2014 at Marriott Hotel, Islamabad. Advertisement along with salient features of the request was published in the newspaper on 28th March 2014. Individual notices were also sent to all concerned on March 31, 2014.

2. During the hearing, MoW&P stated that the announced upfront tariff on coal could not attract private sector investment in coal based power generation in the country as was expected. Nonetheless, the investors after performing market due diligence gave feedback to the Ministry/Federal Government that the upfront coal tariff was not commercially viable. On the basis of Investor's feedback, the following items of the upfront tariff were identified to be reviewed:-

   I. Per megawatt capital cost of the project.
   II. Net thermal efficiency.
   III. Fixed & variable O&M cost.
   IV. Change in plant factor of coal based power plants.

3. The Ministry submitted that the only way to improve the generation mix was the addition in generation capacity in the national grid through coal. The Federal Government explained the factors and circumstances necessitated the filing of instant request and requested to revisit the existing upfront tariff determined by NEPRA on 6th June 2013 for coal based power generation.

Salient Features of the Reconsideration Request

4. The salient features of the reconsideration request are as under:

   I. **Project Cost.** The GoP requested the following project cost on foreign financing for different capacities:

Table - I

Capacity	Project Cost on Foreign Financing	
	Determined by NEPRA	Requested by GoP
220 MW	US$ 1.25 Million/MW	US$ 1.60-1.70 Million/MW

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Table - I

Capacity	Project Cost on Foreign Financing	
	Determined by NEPRA	Requested by GoP
660 MW	US$ 1.17 Million/MW	US$ 1.45-1.50 Million/MW
1,099 MW	US$ 1.06 Million/MW	US$ 1.35-1.40 Million/MW

II. **Net Thermal Efficiency.** The GoP requested following net thermal efficiencies (LHV):

Table - II

Capacity	Plant Efficiency	
	Determined by NEPRA	Requested by GoP
220 MW	39.5%	36%
660 MW	42%	39%
1099 MW	42%	40%

III. **O&M Cost.** The GoP requested following O&M cost on 84% Plant Factor in addition to Lime Stone & Ash Disposal:

Table - III

Capacity	O&M Cost	
	Determined by NEPRA	Requested by GoP
220 MW	Rs. 0.48/kWh	Rs. 1.00/kWh
660 MW	Rs. 0.46/kWh	Rs. 0.60-0.65/kWh
1099 MW	Rs. 0.43/kWh	Rs. 0.55-0.60/kWh

IV. **ROEDC & Withholding Tax.** According to GoP, NEPRA while determining the tariffs of IPPs under Power Policy 2002, allowed 7.5% withholding tax on dividend, in addition to return on equity during construction period. Both are missing in the upfront coal tariff which makes the tariff less attractive for the investors while in reality, these projects should be encouraged in order to reduce the overall pool price for power generation.

V. **Plant Factor.** GoP suggested adoption of plant factor of 84% for calculation of tariff instead of notional plant factor of 60%.

Comments/Intervention

5. In response to the advertisement, Hub Power Company (HUBCO) submitted comments while supporting GoP reconsideration request. HUBCO asked for some additional costs along with certain clarifications. Riaz Ahmad and Company also submitted its comments. HUBCO requested

the Authority to provide clarification/adjustment in tariff determination regarding certain issues with Coal Supply Agreement for provision of certain reserve accounts. HUBCO's as well as Riaz Ahmad and Company's detailed comments are discussed in the respective issue in the succeeding paras. In response to notice of hearing, various stakeholders such as, PPIB, NTDC/CPPA, TCEB, SDPI, Riaz Ahmad and Company, Hub Power Company, Custom Syndicates, and various IPPs participated in the hearing and also provided written comments. The response of the commentators either in the hearing or through written communications have been considered and have been discussed, where appropriate, in the relevant parts of the decision.

Issues Framed for Authority's Consideration

6. The following issues were put forward for consideration of the Authority, keeping in view the request of GoP and information received from the stakeholders/ general public:

I. Whether the GoP's reconsideration request is maintainable in terms of section 31 (4) of NEPRA Act?
II. Whether Changes in the approved net thermal efficiencies requested by GoP is Justified?
III. Whether a request for revision in project cost is justified?
IV. Whether Allowing Return on Equity During Construction (ROEDC) Is Justified? & whether Change in Project Drawdowns with 80% Upfront Equity Injection is justified?
V. Whether an increase in operations and maintenance costs is justified?
VI. Whether the Cost of Jetty should be included in Upfront Tariff Calculations?
VII. Whether Separate Tariff for Small Units on Supercritical Technology should be introduced?
VIII. Whether Plant Availability of 82% allowed is on the Lower Side?

Whether the GoP's reconsideration request is maintainable?

7. Government of Pakistan through the Ministry of Water & Power (MoW&P) filed a request dated February 11, 2014 for reconsideration of the decision of the Authority dated 6th June 2013 regarding upfront tariff for coal power projects. In its reconsideration request, GoP highlighted the factors that necessitated the filing of request and requested the Authority to condone the delay.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

8. GoP explained that the Authority determined the upfront coal tariff on June 06, 2013, however, almost one year has been passed and no serious investor has approached NEPRA for opting upfront tariff. GoP further explained that considering the feedback of investors on certain aspects of upfront coal tariff, certain facts and issues have come to the knowledge of GoP which necessitates reconsideration of upfront tariff by NEPRA to make it viable tariff and to provide comfort to the investors.

9. The Authority considered the request of GoP and considering the issues highlighted by GoP and keeping in view the national importance of coal based power generation, the Authority is of view that it would be fit and proper that the reconsideration request may be decided on the merits rather than on technical grounds. The Authority is cognizant of the fact that under the Act, one of its main functions is to protect the interest of consumers and the companies providing electric power services therefore, wherever necessary, it must exercise the jurisdiction and take such measures which discharge its duty and advance the objects sought to be achieved by the Act. The Authority has also noted that it is an established principle of law that the technicalities should not be allowed to defeat the ends of justice and merits of the case therefore, considering this and in the light of above, the Authority has decided to condone the delay in filing the reconsideration request by GoP.

Whether changes in the approved net thermal efficiencies requested by GoP is justified?

10. Government of Pakistan (GoP) in its reconsideration informed that the sizes of large coal plants range from 600 MW up to 800 MW each, while the net plant efficiencies technically achievable are in the range of 38%-40% for routine production whereas these are achievable upto 42% – 43 % for experimental technologies. GoP proposed that, Pakistan should only use standard proven technologies in the absence of even the expertise for basic subcritical coal plants. In support thereof GoP referred to the available information from different sources internationally as well as regionally, **The GoP accordingly requested NEPRA to revise its upfront tariff efficiency levels for 220 MW plants from 39.5% to 36% (net), for 660 MW units from 42% to 39% (net) and for 1099 MW plants from 42% to 40% (net).**

11. The Authority noted that thermal efficiency is the most crucial part of the any power plant's tariff. Slight changes in the efficiency have significant financial impact on the tariff, particularly keeping in view long project life. Therefore, it is pertinent to have in depth analysis of

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efficiencies that are being achieved for similar technology and specification. Keeping this in view, the Authority carried out benchmark analysis of efficiency by going through various studies/research papers on the subject published by the Worlds' reputed agencies/organizations including the reports cited by GoP in its reconsideration request.

12. The Authority understands that the actual efficiencies may vary and will be dependent on coal quality, operations and design parameters, and location etc. However, the Authority also realizes that for upfront tariff determination, the technical benchmark to be established is not supposed to be specific plant/location, but a generic number, which the investors can achieve without compromising the cost/efficiency trade off. The Authority analyzed numerous studies on the subject, some of which are summarized in the table below:

Table - IV

Reports/Studies	Efficiency LHV	
	SubC/CFB	SC PCC
IEA Coal Advisory Council -	38%	41%
IEA 2012 Technology Roadmap High-Efficiency, Low-Emissions Coal-Fired Power Generation	38%	42%-43%
the Future of Coal MiT 2007	35%-39%	39%-42%
IEA Clean Coal Tech Centre	39%	43%-45%
Energy Information Administration 2013 Energy Information Administration (EIA) Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants, April 2013	N/A	40.70%
CERC 2014-2019 Tariff Norms	35.5%-36.8%	38.3%-41.8%
Technology Action plan HELE, Major Economies Forum On Energy and Climate December 2009	40.20%	42%

13. From the above table, efficiencies reported in various studies by World's leading research institutions/Agencies can provide reasonable basis for establishing benchmarks. The SubCritical (SubC) and Circulating Fluidized Bed Combustion (CFBC) efficiencies ranges from the lowest 35.5% (India) to highest 40.2% (for state of the art European plants). Whereas, SuperCritical (SC) efficiencies are in the range of 38.3 % (mostly Indian) to around 45% (with advance SC technology using high grade quality coal). The Authority notes that the approved of 39.5% efficiency for SubC/CFBC plant although is achievable but the additional cost to be incurred would not be justified. Similarly, 42% efficiency for SC Pulverized Coal Combustion (PCC) boilers above 220 MW units approved by the Authority is in the mid-range of the commercially available technology in the market.

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14. Having considered the efficiencies indicated in the different reports, the Authority is of the opinion that 36% efficiency sought by GoP for 220 MW units is considerably low even when compared with efficiencies of lignite based power plant having lower carbon content and high moisture.

15. The Authority, after having gone through the record and arguments put forth by GoP and different stakeholders, feels that the approved efficiency benchmark can be achieved, but will be difficult for the investor to achieve this in the cost bracket allowed by the Authority. Therefore, keeping in view; (a) market trends and reality; (b) regional and world efficiency's comparison; (c) the impact of coal quality on efficiency; (d) the project cost and efficiency trade off, the Authority decided to revised the net efficiency for imported/local coal as follow:

Table - V

Efficiency	220 MW		660 MW		1099MW	
	GoP	Revised	GoP	Revised	GoP	Revised
Imported/Local Coal (LHV) net	36%	37%	39%	39%	40%	40%

16. No adjustment; however will be allowed if the efficiency is established lower than the approved minimum benchmark efficiencies. To encourage efficiency in the sector, the Authority has decided to devise a sharing mechanism through which investors will be incentivized and will share the benefit if they bring plants with efficiency higher than the benchmark efficiency approved by the Authority as indicated in Table - V above. The sharing mechanism as provided herein below, 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.

Table - VI

Gross MW	Efficiency net (LHV) achieved At COD	Sharing Ratio Power Purchaser : Sponsor
220	37% (min)	100% : 0%
350/660	39% (min)	100% : 0%
1099	40% (min)	100% : 0%
220	37.01% - 37.50%	70% : 30%
350/660	39.01% - 39.50%	70% : 30%
1099	40.01% - 40.50%	70% : 30%
220	37.51% - 38.00%	50% : 50%

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350/660	39.51% - 40.00%	50% : 50%
1099	40.51% - 41.00%	50% : 50%
220	38.01% - 38.50%	30% : 70%
350/660	40.01% - 40.50%	30% : 70%
1099	41.01% - 41.50%	30% : 70%
220	>38.5%	0% : 100%
350/660	>40.5%	0% : 100%
1099	>41.5%	0% : 100%

Whether Request For Revision In Project Cost Is Justified?

17. The Authority in its determination for upfront tariff determination allowed the following project cost per MW:

Table - VII

Description (Gross)	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	US$M per MW	US$M per MW	US$M per MW	US$M per MW
220 MW	1.251	1.399	1.251	1.399
660 MW	1.166	1.351	1.166	1.351
1099 MW	1.058	1.250	1.058	1.250

18. GoP, in its reconsideration request, stated that capital cost allowed by NEPRA for 660 MW imported coal on foreign financing is on the lower side. According to GoP, its instant request was based on feedback received from private sector investors and after reviewing the cost of European and American power plants on similar technology and specifications. The GoP stated that comparable capital cost for plants manufactured in Europe and America range between US$ 2-3 million per megawatt, whereas, Chinese manufactured power plants would cost in the range of US$ 1.45-1.70 million per megawatt for 660 MW against US$M 1.17 per MW allowed by the Authority. It was further stated that no investor indicated interest in the Upfront Tariffs for 220 MW and 1099 MW Coal Fired Power Projects, due to the lower approved cost therefore it needed to be reviewed so that investors could develop power projects in order to reduce the average power generation costs in the country and eliminate the menace of circular debt. GoP accordingly proposed Capital cost of around US $ million 1.6-$1.7 per MW and US $ million 1.35-1.4 per MW for projects of 220 MW and 1100 MW respectively.

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19. Hub Power Company (HUBCO) has also provided comments on the issue of increase in project cost. HUBCO justified 1.67 million per MW project cost for 330 MW project if, among other things Sinosure premium and import duties are included.

20. The GoP referred to a report titled "Projected Costs of Generating Electricity, 2010 Edition" prepared by International Energy Agency/ Nuclear Energy Agency, Organization For Economic Co-operation And Development' ("OECD) which stated that most coal-fired in OECD countries have overnight investment costs ranging up to US $ 2800 per kilowatt for plants without carbon capture. The Authority discerned that the same report indicated the range of overnight cost (which is the capital cost without IDC) from US$900/kW up toUS$2800/kW. The report also indicated SC plant in China costs around $602-672/KW. At the outset, the GoP submitted numbers look like the average capital cost of OECD region, in fact, it was at the higher end of the SC plant capital cost.

21. To further strengthen its argument for increasing Capital Cost, GoP also referred to US Power Consultant recent feasibility study for 2x660 MW Power Project at Jamshoro based on SC technology. The GoP stated that the total cost, including the EPC, Contractor Charges and Interest During Construction has been estimated at US $ 2290 million i.e. US $ 1.908 Million / MW (net). The Authority considers that reference to the project cost was not in the true perspective. It is to be noted that the PC-1 of this project was sent to NEPRA for comments. It was observed that in the PC-1, the consultant added contingencies of around Rs.16 billion along with Rs. 16 billion for "emission controls" whereas for the same purpose, the cost of expensive FGD and ancillary equipment has already been taken into account in the total project cost. If these two costs are excluded for making apples to apple comparison, the total project cost of Jamshoro power project gross capacity works out to be US$ 1.5 million per MW against US$ 1.9 million per MW indicated by GoP.

22. GoP also referred to EIA's study on "Updated Capital Cost Estimate for US Utility Scale Electric Generating Plants — April 2013". Wherein "overnight" costs, for a single unit 650 MW advanced pulverized coal plant is taken as US $ 3,246 /kW i.e. US $ 3.246 million per MW. The Authority is cognizant of the fact that US has very stringent environmental laws that substantially increase the capital cost.

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23. The Authority also compared the capital cost of coal fired power plants in neighboring India in the context of GoP's concerns regarding capital cost. The Central Electricity Regulatory Commission (CERC), in its order dated 4.6.2012 established "Benchmark Capital Cost (Hard cost) for Thermal Power Stations with Coal as Fuel". The benchmark exercise was done for 500, 600, 660 and 800 MW coal projects both in Green field and extensions. CERC's hard cost comprised of Steam Generator/Boiler Island, Turbine Generator island, Associated auxiliaries, Transformers, Switchgears, cables, cable facilities, Grounding & Lighting packages, Control & Instrumentation, Initial Spares for BTG, Balance of Plant including cooling tower, water system, coal handling plant, ash handling plant, Fuel oil unloading & storage, Mechanical miscellaneous package, switchyard, Chimney, Emergency DG Set.

24. The Authority is aware that India has significant advantages in terms of experience, technological know-how in building and operating coal fired plants. However, the Authority feels that the capital cost of neighboring countries can be used to form a basis for reviewing GoP's request and making fair assessment of capital cost. The Authority does understand that such exercises are for comparison purposes as it helps analyze whether the Authority's approved costs are within the benchmark established elsewhere and that the approved costs are not the outliers.

25. For the purpose of making comparison, the bench mark capital cost of India was adjust to cater for exchange rate variation, Inflation, and after including soft cost like custom duties, IDC financing fee etc, which is for a typical 600 MW project works out to be US$ million 1.01 per MW. If the cost is increase further by 30% to account for India's technological advantage and experience, the final cost in Pakistani context works out to be US$ 1.32 million per MW.

26. It is to be noted that Thar Power Company agreed to accept US$ 1.25 million per MW cost allowed for 220 MW Gross on local coal/foreign financing category for its proposed 330 MW sets. Thar Power Company however, requested additional US$ 0.1 million for European boiler. The detailed deliberation in the matter has been done in the Thar Power Company's upfront tariff determination.

27. The Authority in its June 06, upfront determination allowed certain items as pass-through including Sinosure fee in case the investors avail Chinese financing. If the impact of Sinosure fee @ 7 % of total debt and interest payment is included, the project cost along with the customs

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duties @ 6% of EPC, the project cost already allowed by the Authority works out as US$ 1.35 million per MW for 660 MW foreign financing project. The allowance of US$ 0.1 is further added on account of European boiler cost, the resultant project cost per MW will be as follows:

Table - VIII

Description MW (Gross)	Imported + Local Coal		GoP Request
	F. Financing	L. Financing	F. Financing
	US$M per MW		
220 MW	1.51	1.62	1.6-1.7
659 MW	1.45	1.64	1.45-1.7
1099 MW	1.35	1.53	1.35-1.4

28. The above analysis clearly indicates that the approved project cost per MW is not out of line with the industry's project cost trends. In fact, it is almost within the range of project cost requested by GoP. For providing comfort to the intending investors the Authority has decided to include the cost of Sinosure, customs duties and additional cost of US $ million 0.1 per MW for European boiler. In order to claim the cost of Sinosure, customs duties and additional cost for European boiler, the verifiable documentary evidence shall have to be provided to the satisfaction of the Authority. The investor however shall not be allowed these cost above the allowed limits as accounted for in the upfront tariff.

Whether Allowing Return on Equity During Construction (ROEDC) Is Justified? & whether Change in Project Drawdowns with 80% Upfront Equity Injection Is justified

29. GoP in its review has stated that Twelve (12) IPP projects have been commissioned under Power Policy 2002. NEPRA while determining their tariffs allowed withholding tax @ 7.5 % on dividends in all cases, in addition to Return on Equity during Construction (ROEDC) period. GoP pointed out that these two items are missing in Upfront Tariff. Given that these coal plants have construction time of 36 to 48 months, non-provision of ROEDC reduces the equity returns and makes the coal projects less attractive for investors while in reality, these projects should be encouraged in order to reduce the overall pool price for power generation.

30. During the hearing, Secretary, Ministry of Water and Power stated that Chinese banks require the investor to inject 80% equity up front. In this regard, HUBCO in its comments on GoP reconsideration request, also endorsed the GoP's view. HUBCO submitted that if this adjustment is not allowed, then the real IRR will be even less than 17%.

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31. From the submission received, the investors, including Engro Corporation supported the GoP showed concerns that RoE @ 20% was not sufficient enough to attract investment in these large scale infrastructure projects. It was proposed that IRR should be reintroduced in order to compensate the investor during project gestation period.

32. The Authority considered the comments of GoP and Engro Corporation. In Authority's opinion, IRR based return (which automatically accounts for RoEDC) does not provide reasonable flexibility to the investor for efficient drawdowns and payments to the EPC contractor. For making adjustment at the time of COD, a lot of information is required, which involve a cumbersome time consuming process. Moreover this also does not provide incentive to the investor for early completion of the project. In order to provide incentive to the investor for early completion and efficient utilization of funds, the Authority has decided to allow ROE instead of IRR. The Authority considers that RoE is very sensitive to the Project drawdowns. To cite an example, with 20% IRR and 40 months construction period, one can calculate RoE as low as 23% and as high as 37%, by only changing project drawdowns. The Authority understands that, it is highly unlikely that project sponsor would get such extreme values of RoE. But the point is that the process of IRR based return is not only complex (at CoD stage wherein every dollar injection dates are noted) but also very subjective and prone to the analyst's bias. It must also be noted that the Authority does understand that to avoid complications, IRR based return can be standardized, but in doing so, NEPRA would have to set benchmarks in many stages of calculation, that will lead to micromanagement which are considered against the spirit of regulation. Further, the sponsor's needs to understand that return to be computed for upfront tariff is required to be based on generic drawdowns, which can't be tailored to individual projects . The bottom line of allowing return should always be to adequately compensate the investors for the risk they are taking, keeping in view comparable market returns and other incentives/safety offered to the power sector. Further, after gathering information on the subject from various sources, it was revealed that straight RoE not IRR is offered to power projects in many regions of the world including India and US. The Authority therefore, decides to allow simple RoE based on generic drawdowns and other reference parameter that also ensures adequate IRR i.e. 17% for imported coal and 18% for local coal other than Thar coal.

33. The Authority also feels that coal power projects both on local and imported coal are going to play very vital role to stop the hemorrhaging effect of load shedding on the overall economy.

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These plants are going to be multibillion dollar projects, which will not only improve balance of payments but also create jobs, develop ancillary infrastructure like roads, railway tracks etc., in addition to bringing substantial MWs to the National Grid. The Authority acknowledges that allowing attractive returns can lure the investors to coal power projects and hence usher a new phase of infrastructure development in the country. In view of the above, the Authority therefore, decides to revise the RoE as indicated in the table below.

Table - IX

Description	RoE Allowed	
	Local Coal	Imported Coal
220 MW 40 months construction time	26.5%	24.5%
660/1099 MW 48 months	29.5%	27.2%

34. With regards to allowing withholding tax on dividend, it must be noted that these taxes are required to be paid by the investors on the dividend declared. In the Authority's opinion, withholding tax effect shouldn't not be passed on to the consumers as it will further inflate the already high RoE. Therefore, the Authority decided not to allow the impact of withholding tax on dividends in the tariff.

Whether Increase In Operations And Maintenance Costs Is Justified

35. The Authority in its determination approved the following O&M charges for 220/660/1099 MW projects.

Table - X

MW Gross	Variable O&M	Fixed O&M	Fixed O&M	Total O&M	Total O&M
	Rs/kWh	Rs/kW/h	Rs/kWh @ 84% PF	Rs/kWh @ 100 PF	Rs/kWh @ 84% PF
220	0.1140	0.3070	0.3655	0.4210	0.4795
660	0.1140	0.2870	0.3417	0.4010	0.4557
1099	0.1140	0.2660	0.3167	0.3800	0.4307

36. With regards to O&M cost, HUBCO proposed to increase O&M cost to PKR 1.0 / KWh for 220 MW net for non-mine mouth plants. Thus Proportionately, HUBCO recommended PKR 0.68 / KWh for 660 MW net.

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37. GoP also request to revise the allowed Fixed O&M Cost for 660 MW, Imported Coal based projects, which in its opinion were on the lower side. The government referred to recently published EIA report to substantiate the increase. GoP stated that EIA in 2013, reported the following O&M costs for 650 MW single unit Advanced Pulverized Coal (PC):

Fixed O&M @ 84% Plant Factor, US/PKR 97.1	Rs 0.4988/kWh
Variable O&M, US/PKR 97.1	Rs. 0.4340 /kWh

38. The GoP also referred to tariff regulation of Gujarat Electricity Regulatory Commission (GERC), an Indian state regulator which stipulated normative O&M expenses for lignite based plants as Indian Rupees 1,217,000/MW (2008-09 figures) which translates to US Cents 0.5308/kWh at 60% plant factor. If this number is indexed for inflation @8% per annum it translates to US Cents 0.7222/kWh (Pak Rs. 0.7583/kWh at current Rs/US $ rate of 105).

39. Another study referred was by CH2MHILL for Comparison of PC, CFB and ICC Technologies, which indicated Fixed and Variable O&M Costs as US $30,100,000 for a 368 MW Power Plant which translate to be US Cents 1.5562/kWh at 60% plant factor and US Cents 1.1116 /kWh at 84% plant factor.

40. As per the reconsideration request, the aforesaid data indicate a very wide range of annual O&M Costs. According to GoP, various sponsors are of the view that for 660 MW projects, the **O&M cost should be in the range of Rs. 0.60 to 0.65 per kWh based on 84% plant factor and Rs 1/kWh on 84% plant factor for 220 MW net sets. GoP request regarding O&M is summarized hereunder:**

Table - XI

Capacity	O&M Cost	
	Determined by NEPRA	Requested by GoP
220 MW	Rs. 0.48/kWh	Rs. 1.00/kWh
660 MW	Rs. 0.46/kWh	Rs. 0.60-0.65/kWh
1099 MW	Rs. 0.43/kWh	Rs. 0.55-0.60/kWh

41. The Authority noted that GoP has excluded the Ash handling cost, which has already been allowed cost @ Rs 0.22/kWh and Limestone @ Rs 0.09/kWh in the total O&M cost. The Authority separately mentioned ash handling and limestone cost for clarification purpose and also for investors' reassurance. The Authority reviewed the GoP referred studies along with

several other studies/research papers on the subject and noticed that nowhere, ash handling and limestone costs were indicated in addition to total O&M cost. This means that these costs are part of O&M expense. Therefore, for apple to apple comparison, O&M cost of the studies has to be compared with the approved O&M cost after inclusion of ash handling and limestone cost. With the inclusion of lime stone and ash disposal cost, the overall approved O&M cost for various sets is indicated in the table below:

Table - XII

MW Gross	Ash Disposal	Lime Stone	Variable O&M	Fixed O&M	Fixed O&M	Total O&M	Total O&M
	Rs/kWh	Rs/kWh	Rs/kWh	Rs/kW/h	Rs/kWh @ 84% PF	Rs/kWh @ 100 PF	Rs/kWh @ 84% PF
220	0.22	0.09	0.1140	0.3070	0.3655	0.7310	0.79
660	0.22	0.09	0.1140	0.2870	0.3417	0.7110	0.77
1099	0.22	0.09	0.1140	0.2660	0.3167	0.6900	0.74

42. Further, GoP has cited 2008 O&M cost of Gujarat Electricity Regulatory Commissions (GERC), a state regulator of India, which was inflated @ 8% per annum, without giving any basis whatsoever. The GERC numbers are not only old but also of one state regulator therefore, it can't be made a basis for increase in O& M cost. Further, for better comparison, it is appropriate to see the latest O&M norm and that too of the Central Regulator which in the instant case is CERC. This will give a more holistic picture of O&M cost prevalent in India. The following table indicates the total O&M cost allowed by Central Regulator (CERC) for FY 2013-14 and for FY 2014-15.

Table - XIII

O&M Cost	220 MW sets			660MW sets and Above		
	India	GoP	Approved	India	GoP	Approved
FY 2013-14	22.74			14.62		
Indian Rs in lakh/MW						
O&M US cent/kWh	0.49			0.32		
O&M PKR/kWh	0.48			0.31		
Total O&M after 30% Escalation (Pak Rs/kWh)	0.62	1.3	0.79	0.40	091-0.96	0.74-.77
FY 2014-15						
Total O&M after 30% Escalation (Pak Rs/kWh)	0.66			0.40		

43. The table indicates that after necessary adjustments, the O&M allowed in India for 660 MW and above set are PKR 0.399/kWh for FY 2013-14 and PKR 0.401/kWh for FY 2014-15. It is evident

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from the aforesaid that the NEPRA approved O&M rates of PKR 0.77/kWh for 660 MW are significantly higher than the applicable benchmark O&M cost approved in India even after 30% escalation. Therefore, claims of GoP regarding O&M cost being insufficient don't hold grounds and do not merit Authority's reconsiderations.

Whether to Include the Cost of Jetty in the Tariff Computation

44. For large scale coastal imported coal project, the construction of jetty would be indispensable. The GoP is planning to build close to 6000MW near Gadani. The Authority expects that a jetty and its allied infrastructure needs to be built and operated by an independent party for which a standardized fee arrangement will be required. Sinohydro Resource Ltd. in partnership with Al Mirqab Capital is planning to build 660 × 2 MW imported coal power plants proposed at Port Qasim, Karachi. According to the company the project has been incorporated as one of the "China-Pakistan Economic Corridor Early Harvest Projects". During the meeting with NEPRA officials, Sinohydro also stressed the need for incorporating jetty and allied infrastructure cost for all coastal coal plants.

45. Currently, Port Qasim doesn't have the capacity to cater for a coal requirement of two 660 MW units which typically require ~6.5 million tons of coal per annum. The GoP in its reconsideration request has neither indicated the need for a jetty nor has shared jetty cost estimates. The Authority being cognizant of the fact that in order to cater for the needs of plants to be set up on imported coal, jetty will have to be constructed. In view thereof, the Authority considers it advisable to incorporate an indicative common jetty cost in the upfront tariff determination.

46. None of the stakeholders provided information with respect in the said determination to jetty cost. In the absence thereof the Authority has decided to rely on its determination pertaining to AES in 2009. The Authority allowed US$ 188 million on account of jetty related infrastructure cost for its 1320 MW (660 × 2) project similar to the one proposed by Sinohydro Resource Ltd. After examining the information available through different sources, and after necessary adjustment, including inflation adjustment for AES's 2009 proposed jetty cost, the Authority considers US$ 200 million as reasonable estimate for Jetty's Capex. After taking into account cost like IDC, Financing fee etc., the total Jetty cost, including allied infrastructure cost works out to be around US$223.5 million. It must be noted that as per preliminary feasibility study, Sinohydro and Al Mirqab Capital also indicated around US$200 million of jetty Capex.

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47. The Authority is also aware of the fact that a standalone jetty for one project will cost more than the common jetty proposed at Gadani. AES in its petition indicated that their cost could reduce to $120 million from the proposed US$ 188 million if the bigger jetty is built that could feed another project with a similar coal requirement.

48. At this stage, where jetty cost can't be finalized and advantage of common facility can't be gauged, the Authority is constrained to adopt a jetty cost of US$223.5 million. Based on the aforesaid levelized jetty cost works out to be US$9.46 per ton using the following assumptions:

Table - XIV

Jetty Capex	US$ 200 million
Debt equity	75%:25%
Cost of debt	4.95%
Cost of equity	27%
Financing fee	3.5%
Availability	85%

49. The Authority in its prescribed mechanism for calculating fuel cost component has provided for "other cost", which include port handling cost. The Authority considers that this cost is also related to the coal handling at port, therefore, is also included in the "other cost' as part of imported coal price. The jetty cost including its O&M cost per ton will be subject to adjustment on the basis of verifiable documentary, evidence. The Authority expects that before requesting an adjustment in jetty cost, the petitioner will have to thoroughly investigate into the possibilities of changing the design of jetty in a way that least cost and reliable coal offloading facility is arrived through transparent competitive process while taking on board the PPIB, Pakistan Navy, Pakistan Coast Guard, Ministry of Ports and Shipping and clearance from all the relevant departments.

<u>Whether Plant Availability of 82% allowed is on the Lower Side?</u>

50. The Authority in its upfront tariff determination allowed 82% plant availability for 220/660/1099MW units. Government of Pakistan in his reconsideration request has suggested availability of 84%. Thar Power Company in its tariff petition for 330MW unit has stated 85% guaranteed plant availability. Thar power Company has indicated that this is based on the initial quotes offered by the EPC contractor. The Authority allowed 82% availability as there wasn't

sufficient data available from sponsors having EPC quotes. The Authority now considers that this factor needs to be revisited in light of the GoP's reconsideration request and the guaranteed availability offered by Thar power Company. In view of the above, the Authority decided to revise the minimum plant availability from 82% to 85%. And the same has been used for tariff calculation purpose.

Whether Separate Tariff for Small Units on Supercritical Technology should be introduced?

51. HUBCO submitted in its comments dated May 02, 2014 that 350 MW gross super critical units are becoming common and have references available worldwide. In addition, this category will enable to investor to quickly develop the project as it needs less financing and it will improve efficiency with economical capital cost. Therefore, HUBCO recommended that 350 MW super critical category should also be introduced.

52. It is pertinent to note that a typical SC units available in the market starts in 600 - 660MW category. The Authority acknowledges that perhaps 350MW SC units might be increasingly becoming prevalent. However, one has to analyze this on the basis of cost and benefit analysis. In this regard, HUBCO was asked to provide further details regarding efficiency and project cost for 350 MW SC units. In response thereof, HUBCO showed its inability to share such information as HUBCO has not done the market survey and expect NEPRA to come up with cost and efficiency parameter for this category.

53. The Authority appreciates that there are few leading business houses in Pakistan that can afford to bring significant capital in order to build large 660 MW units. Sufficient facilitation should be provided so that investors with limited financial means are encouraged to bring latest technology. This will not only bring additional MWs, but also feed power to the National grid with lower tariffs than 220 MW units which are relatively expensive and inefficient. The Authority therefore, decided to accommodate investors if they are willing to opt for 350 MW Supercritical technology.

54. The International Energy Agency's Cleans Coal center in several of its reports has noted that the Engineering, Procurement and Construction (EPC) cost for a supercritical unit is 2–5% higher than a subcritical unit. It must be noted that Thar Power Company in its petition for 330 MW plant has already accepted the Authority approved project cost of US$ million 1.25 per MW. For more reliable comparison, the Authority decided to assume the total project cost of $ million

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1.25 per MW and further increase the cost by 5% to accommodate the investors additional cost expected to be incurred for Supercritical plant. With provision of European boiler and after inclusion of Sinosure fee and custom duties, the resultant project cost for 350MW SC plant based on imported coal/foreign financing works out to be US$ million 1.59 per MW and the same cost is therefore, approved. The Authority also decided to assume a minimum efficiency of 39% LHV net and auxiliary consumption of 8% for 350 MW SC units. Both the efficiency and auxiliary consumption will be subject to adjustment at the time of COD only if the auxiliary consumption proved to be lower than 8% and efficiency higher than 39%. The Authority further decided to offer detailed tariff on 350 MW supercritical units on both imported/local coal and foreign/local financing.

Other relevant comments/Issues

55. Some commentator submitted generic comments most were either addressed in the hearing or in the above paras. Commentators further sought clarification and raised additional issues post hearing, on which Authority's decision was sought. The relevant comments/issues raised by commentators along with the Authority's para-wise decision/comments are as under:

I. HUBCO requested that premium over NEPRA approved coal price should be 3%. This number is indicated by various suppliers that HUBCO is in talk with.

a. The Authority's approved mechanism for coal pricing already provide room for any premium/discount on the coal price. So, there is no need to further clarify the matter. Also, it is too early to fix premium at this stage. HUBCO has not backed this number with documentary evidence. The Authority will look into this number at later stages when Coal Supply Agreements are in advance stage.

II. According to HUBCO, High CV cannot be procured for 30 years, therefore, the developer will have to choose a mix of low and high CV coal. Also, there is no single coal and shipping mechanism in place with each combination having implication on CIF price. It is therefore, recommended to allow developers to design their logistic solution on the basis of a coal + ship combination they are comfortable with as long as its US$ per mmBTU CIF price is not higher than CIF price of reference coal.

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a. Authority appreciates that market may not offer long-term high CV of coal. Therefore, the Authority decided that the fuel agreements should be flexible enough so that the developer can design their logistic solution on the basis of coal + shipping combination as long as US$ per mmBTU CIF price is not higher than CIF price of reference coal as determine by the Authority.

III. According to HUBCO, The long term contract of shipping will require IPP to make capacity payment to shipping companies. This charge, defined as "Dead Freight" doesn't increase the shipping cost but only carves out a portion of shipping cost into fixed and variable cost. Therefore, for imported coal, Fuel cost component should be divided into fixed and variable cost.

a. Large coal fired power plant around the world are mostly base load plants. The primary reasons are that there are relatively cheaper to operate and that cold, warm and hot start-up not only take time, but also significantly reduce life, efficiency and reliability of the plant. Since the proposed plants are going to be base load therefore, there is no need to have a two part tariff as the power purchaser will have to guarantee a minimum offtake of power at certain plant availability, which in the instant case is 85%. The base load provision therefore, addresses the concern of Coal supplier and IPPs' regarding two part fuel cost component.

IV. Coal can be imported from multiple ports (KPT, Port Qasim, Gwadar) in Pakistan, All open access ports should be allowed. According to HUBCO, if a developer wants to opt for a customized solution involving own investments then the cost should be allowed as long as the overall impact on price is no more than the most feasible open access option available.

a. [HUBCO's suggestion is valid therefore, the Authority decided to allow the developer to have customized solutions involving own investments as long as the overall impact on price is no more than the most feasible open access option available]

V. HUBCO stated that Debt Servicing Reserve Account (DSRA) has invariably become a requirement for all project finance transactions. Hence DSRA impact needs to be built as a separate component in the ROE calculations of upfront tariff. In the absence of ROE adjusted for DSRA, the effective IRR is reduced. And that the coal supplier would require the commitment of the IPP to pay in time and offtake the quantities in compliance with

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CSA and such commitments need to be backed by monetary instruments such as Standby letter of Credit (SBLC). This would necessitate Fuel Payment Reserve account (FPRA).

VI. HUBCO stated that 90-day inventory recommended in Upfront Tariff is the inventory to be maintained on site to create a buffer due to port handling and shipping requirement involved between FOB and Gate Delivery. Additionally, there will be some inventory in transit during shipping and relevant working capital will be stuck in funding such inventory. In addition, LCs will have to be opened for international trade. HUBCO thus, recommended to build a 2% margin over fuel price to pay for LC and inventory in-transit funding costs.

a. With regards to all the above points raised by HUBCO, the Authority noted that 70% of the capacity charges are paid in advance on a monthly basis that including a substantial portion of Debt servicing and ROE component. However, IPP further pays debt servicing to lenders usually on quarterly or biannual basis. This create sufficient cash flows in between wherein, the IPPs can adequately address cash flow concerns resulting out of either DSRA/ FPRA or LC charges. Therefore, adding cost on account of DSRA/FPRA is unjustified and against the consumers' interest. Moreover, HUBCO needs to be cognizant of the fact that, it is an upfront proceeding and not cost plus. Upfront tariff is an overall package wherein, sufficient room has been given to cope with the eventualities including the cost/fee which HUBCO is requesting. Therefore, HUBCO inclusion of the above mentioned cost/charges doesn't merit Authority's reconsiderations.

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VII. HUBCO asserted that the long-term CSA will require minimum coal offtake commitment by IPP. This means IPP will have to pay LD to coal supplier if it is not able to offtake minimum quantity. In case of NTDC default on account of non-payment or if the plant is changed from base to lower load operation, then such LD should be transferred to power purchase. Such LDs should be pass through for which a mechanism needs to be included.

a. This issue needs to be addressed in the PPA with the power purchaser.

VIII. Riaz Ahmad and Company has stated that noncoastal coal power project similar to the one proposed in Punjab would be linked with rail network so the rail siding and infrastructure cost from nearest track to the site has to be borne by the Railways (through its freight

tariff) or the power producer. This must be confirmed by NEPRA to avoid ambiguity in future as this cost is quite handsome as Right of Way payments for land acquisition and rail infrastructure to be borne by one or another party. Similarly in project cost calculation the rail infrastructure required in the project boundary for unloading of coal is to be calculated and included in project cost if not yet done.

a. Most of the large coal fired plants around the world are established around the coast primary because of ease of access to abundant water resource and because coastal projects avoid costly road/rail transportations. The Authority noted that some investors, including government of Punjab have shown interest in developing large coal power plants in Punjab. During discussion on the subject, it came to the Authority's notice, that currently neither there are sufficient railway tracks nor enough railway carriages to cater a typical SC unit. So significant Capex is expected to be incurred in this regard. Keeping in view these factors, including long distance from port to proposed power plant to mid-country, the transportation is going to be a significant portion of the total fuel cost. By some estimate it might be as high as 80$ per ton for the first 10 years. Fuel is a pass through item including its transportation cost, at the outset, the Authority can't oppose having an option of in land coal transportation. However, the Authority is cognizant that cost even though is a pass through, it has to be reviewed keeping in view alternative arrangement for project location, size and that alternative transportation options have been exhausted to the benefit of achieving optimal tariff. At this stage the Authority in principle has no objection of allowing inland coal transportation from port to the potential power plant. However, all such plants proposing to be built on noncoastal area comprising significant inland coal transportation cost must ensure that alternative location of plant have been looked into.

56. Order

I. The Authority hereby determines and approves the following upfront tariff and adjustments/indexations for imported/local coal power generation for delivery of electricity to the power purchaser:

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Table - XV

Capacity Charge 1-10 Years	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour
220 MW	3.5384	4.8034	3.4999	4.7719
350 MW	3.6789	5.0087	3.6517	4.9887
660 MW	3.4731	4.8873	3.4529	4.8805
1099 MW	3.2428	4.5597	3.2186	4.5478

Capacity Charge 11-30 Years	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour
220 MW	1.7833	1.8701	1.7449	1.8386
350 MW	1.8342	1.9254	1.8070	1.9055
660 MW	1.8040	1.9589	1.7837	1.9521
1099 MW	1.6885	1.8329	1.6643	1.8211

Table - XVI

Energy Charge 1-30 Years	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
220 MW	4.9473	4.9473	4.6157	4.6157
350 MW	4.7153	4.7153	4.4008	4.4008
660 MW	4.7153	4.7153	4.4008	4.4008
1099 MW	4.6080	4.6080	4.3013	4.3013

i. The Tariff Tables & Debt Service Schedules for each project are attached as Annexes to this determination.

ii. The tariff period is 30 Years.

iii. In case of power complex of 1320 MW (660 MW×2), 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. Same will be applicable for other combinations.

II. **Basis for Determination**

The above tariff is worked out on the following basis:

i. **Design Coal (Quality of Coal)**

a. In Pakistan calorific value of coal is as follows:

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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

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

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ii. **Plant Size**

a. The upfront tariff has been determined for the plants of following sizes;

220 MW Gross	200 MW Net
350 MW Gross	322 MW Net
660 MW Gross	607 MW Net
1,099 MW Gross	1,011 MW Net

b. 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;

a. Should be near the load center.

b. Near the source of fuel in case of local coal and near the coastal area in case of imported coal.

c. 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 9% for 220MW and 8% for other capacities.

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**

a. 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.

b. The following capital cost for coal based power projects 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.

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220 MW	US$ 271.803 Million
350 MW	US$ 454.974 Million
660 MW	US$ 767.868 Million
1,099 MW & above	US$ 1,191.670 Million

c. 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.

viii. **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

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Note: Breakup of capital cost indicated in the above formula has been taken from New Coal-Fired Power Plant Performance and Cost Estimates (SI-009808) by Sargent & Lundy and International Energy Agency; Coal Industry Advisory Board (Ian M. Torrens & William C. Stenzel)

ix. **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.

x. **Construction Period**

a. Construction period for the generation facility having capacity up to 220MW and 350MW shall be 40 months.

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

xi. **Financing of Coal Projects**

a. 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.

b. The upfront tariff has been determined on the basis of debt equity ratio of 75:25;

c. 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;

xii. **Financial Charges**

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

b. 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

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available TT&OD selling rate and KIBOR notified by the National Bank of Pakistan and Reuters for the purpose of LIBOR.

(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.

xiii. **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.

xiv. **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.

xv. **Interest During Construction (IDC)**

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

Table - XVII

Year	220 MW	350 MW	660MW	1099 MW
1st Year	33.33%	33.33%	33.33%	33.33%
2nd Year	33.33%	33.33%	33.33%	33.33%
3rd Year	20.00%	20.00%	13.33%	13.33%
4th Year	13.33%	13.33%	20.00%	20.00%

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

c. 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.

d. In case of more than one financing plans, separate IDC shall be calculated for each plan on reference parameters.

e. 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.

xvi. **Summary of Project Cost**

The following project costs have been assumed for different projects 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:

Table - XVIII

Description	220MW		350MW		660MW		1099MW	
	F. Fin. US$ Mlns	L. Fin. US$ Mlns	F. Fin. US$ Mlns	L. Fin. US$ Mlns	F. Fin. US$ Mlns	L. Fin. US$ Mlns	F. Fin. US$ Mlns	L. Fin. US$ Mlns
Capital Cost	271.8	271.8	455.0	455.0	767.9	767.9	1,191.7	1,191.7
Custom Duties & Cess	10.8	10.8	18.1	18.1	30.5	30.5	47.3	47.3
Sub-Total	**282.6**	**282.6**	**473.0**	**473.0**	**798.4**	**798.4**	**1,239.0**	**1,239.0**
Financial Charges:								
Financing Fees & Charges	7.4	7.4	12.4	12.4	21.0	21.0	32.5	32.5
Sino sure Fee	22.2	-	37.1	-	63.9	-	99.2	-
IDC	19.3	67.0	32.2	112.1	72.8	261.6	113.0	405.9
Sub-Total	**48.8**	**74.4**	**81.7**	**124.5**	**157.7**	**282.5**	**244.7**	**438.5**
Total	**331.4**	**357.0**	**554.8**	**597.5**	**956.1**	**1,080.9**	**1,483.7**	**1,677.5**

xvii. **Return on Equity (ROE)**

The Return on Equity shall be:

a. 29.50% and 26.50% per annum for the projects on local coal for construction period of 48 months and 40 months respectively.

b. 27.20% and 24.50% per annum for the projects on imported coal for construction period of 48 months and 40 months respectively.

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c. In case of use of mix coal the ROE will be adjusted according to the following formula;

ROE(Mix)	=	ROE(L)×((Q(L)×CV(L))/ (Q(L)×CV(L) + Q(I)×CV(I)))+ ROE(I)×((Q(I)×CV(I))/(Q(L)×CV(L) + Q(I)×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
ROE(I)	=	Return on Equity component on 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. **Thermal Efficiency**

a. The following minimum reference net LHV thermal efficiencies have been established for calculating reference fuel cost component;

200MW net capacity (at mean site conditions)	37%
322MW net capacity (at mean site conditions)	39%
607MW net capacity (at mean site conditions)	39%
1011MW net capacity (at mean site conditions)	40%

b. 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.

Table - XIX

Gross MW	Efficiency net (LHV) achieved At COD	Sharing Ratio Power Purchaser : Sponsor
220	37% (min)	100% : 0%
350/660	39% (min)	100% : 0%
1099	40% (min)	100% : 0%

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220	37.01% - 37.50%	70% : 30%
350/660	39.01% - 39.50%	70% : 30%
1099	40.01% - 40.50%	70% : 30%
220	37.51% - 38.00%	50% : 50%
350/660	39.51% - 40.00%	50% : 50%
1099	40.51% - 41.00%	50% : 50%
220	38.01% - 38.50%	30% : 70%
350/660	40.01% - 40.50%	30% : 70%
1099	41.01% - 41.50%	30% : 70%
220	>38.5%	0% : 100%
350/660	>40.5%	0% : 100%
1099	>41.5%	0% : 100%

xix. **Price of Coal**

a. The following reference coal price has been used for determining the upfront tariff;

Table - XX

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.

xx. **Local Coal (sub-bituminous)**

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

b. 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.

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c. The basis of coal price shall be provided in the Power Purchase Agreement.

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

xxi. **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.

xxii. **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 premiums used in the calculation of insurance component of tariff are as under:

Table - XXI

Description	220 MW	350MW	660 MW	1199 MW
Ref. Insurance Premium (Rs. Mlns)	192.34	321.53	542.65	842.15

xxiii. **Interest on Working Capital**

a. 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. In case of local coal the inventory will be equivalent to 30 days at 100% plant load.

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

b. 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.

c. 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)×((Q(L)×CV(L))/ (Q(L)×CV(L) + Q(I)×CV(I)))+
IWC(I)×((Q(I)×CV(I))/(Q(L)×CV(L) + Q(I)×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

xxiv. **Operation and Maintenance (O & M) Expenses**

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

b. Reference O&M expenses shall be;

Rs.421 per MWh for a plant of 220/350MW
Rs.401 per MWh for a plant of 660MW
Rs.380 per MWh for a plant of 1099MW

c. The following shall be the breakup of O&M expenses for the different plant size:

Plant Size	Fixed O&M	Variable O&M
220/350 MW	Rs.0.307/kW/h	Rs.0.114/kWh
660 MW	Rs.0.287/kW/h	Rs.0.114/kWh
1099 MW	Rs.0.266/kW/h	Rs.0.114/kWh

d. 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.

e. 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.

f. The reference WPI and US CPI will be of June 2014.

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

Table - XXII

Cost of Lime	
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

h. The cost Lime Stone and As Disposal will be adjusted on actual basis at the time of COD.

xxv. **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 Globalcoal
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 Globalcoal
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 Globalcoal
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 –

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

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

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

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

v. Opening fuel stock quantity (tons),

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

vii. 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:

i. **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

ii. **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);

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V. **Tariff Design**

i. 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.

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

iii. 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:**

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

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

iii. 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**

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

ii. 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.

iii. 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, Japanese 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:

Table - XXIII

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 Loan)	US$/Euro/Yen/Pound to Pak Rupees (based on borrowing by the Company)

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Table - XXIII

Tariff Components	Tariff Indexation & Adjustment
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.

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 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**

i. "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;

ii. "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;

iii. "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.

iv. "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;

v. "Grace Period" means a period equivalent to the construction period of the coal project.

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vi. "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;

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

viii. "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;

ix. "Project" means a generating facility or the evacuation system up to inter-connection point;

x. "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.

xi. '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;

xii. "Year" means a period of 12 months.

XIII. The above order along with Annexes will be notified in the official Gazette in accordance with section 31(4) of NEPRA Act 1997, the details of annexes are as under:

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Table - XXIV

Annex-1	**Reference Tariff Table 220MW Imported Coal Foreign Financing**
Annex-1A	Debt Repayment Schedule
Annex-2	**Reference Tariff Table 220MW Imported Coal Local Financing**
Annex-2A	Debt Repayment Schedule
Annex-3	**Reference Tariff Table 350MW Imported Coal Foreign Financing**
Annex-3A	Debt Repayment Schedule
Annex-4	**Reference Tariff Table 350MW Imported Coal Local Financing**
Annex-4A	Debt Repayment Schedule
Annex-5	**Reference Tariff Table 660MW Imported Coal Foreign Financing**
Annex-5A	Debt Repayment Schedule
Annex-6	**Reference Tariff Table 660MW Imported Coal Local Financing**
Annex-6A	Debt Repayment Schedule
Annex-7	**Reference Tariff Table 1099MW Imported Coal Foreign Financing**
Annex-7A	Debt Repayment Schedule
Annex-8	**Reference Tariff Table 1099MW Imported Coal Local Financing**
Annex-8A	Debt Repayment Schedule
Annex-9	**Reference Tariff Table 220MW Local Coal Foreign Financing**
Annex-9A	Debt Repayment Schedule
Annex-10	**Reference Tariff Table 220MW Local Coal Local Financing**
Annex-10A	Debt Repayment Schedule
Annex-11	**Reference Tariff Table 350MW Local Coal Foreign Financing**
Annex-11A	Debt Repayment Schedule
Annex-12	**Reference Tariff Table 350MW Local Coal Local Financing**
Annex-12A	Debt Repayment Schedule
Annex-13	**Reference Tariff Table 660MW Local Coal Foreign Financing**
Annex-13A	Debt Repayment Schedule
Annex-14	**Reference Tariff Table 660MW Local Coal Local Financing**
Annex-14A	Debt Repayment Schedule
Annex-15	**Reference Tariff Table 1099MW Local Coal Foreign Financing**
Annex-15A	Debt Repayment Schedule
Annex-16	**Reference Tariff Table 1099MW Local Coal Local Financing**
Annex-16A	Debt Repayment Schedule
Annex-17	**Summary of Upfront Coal Tariff**

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Authority

26 6 14

Khawaja Muhammad Naeem
Member

26/6/14

Major (Retd.) Haroon Rashid
Member

26/6/2014.

Habibullah Khilji
Member / Vice Chairman

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26.06.14

Uniform Tariff for Imported Coal based Power Projects for upto 220 MW on Foreign Financing

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	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.0932	0.6619	3.5384	4.1628	9.1100	9.3821
2	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.1483	0.6068	3.5384	4.1628	9.1100	9.3821
3	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.2062	0.5489	3.5384	4.1628	9.1100	9.3821
4	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.2670	0.4880	3.5384	4.1628	9.1100	9.3821
5	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.3309	0.4241	3.5384	4.1628	9.1100	9.3821
6	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.3980	0.3570	3.5384	4.1628	9.1100	9.3821
7	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.4685	0.2865	3.5384	4.1628	9.1100	9.3821
8	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.5426	0.2125	3.5384	4.1628	9.1100	9.3821
9	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.6204	0.1347	3.5384	4.1628	9.1100	9.3821
10	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.7021	0.0530	3.5384	4.1628	9.1100	9.3821
11	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
12	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
13	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
14	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
15	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
16	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
17	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
18	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
19	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
20	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
21	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
22	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
23	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
24	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
25	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
26	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
27	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
28	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
29	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
Average																	
1-10	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.3777	0.3773	3.5384	4.1628	9.1100	9.3821
11-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
1-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.4592	0.1258	2.3683	2.7863	7.7335	7.9645
Levelized																	
1-30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.8642	0.2798	2.9273	3.4438	**8.3911**	**8.6417**

Levelized Tariff = 8.3911 Rs./kWh 8.6417 Cents/kWh

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Annex-1A

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	219.78	MWs	US$/PKR Parity		97.10		
Net Capacity	200.00	MWs	Equity	25%	8,045.83	PKR Million	
LIBOR	0.45%		Debt	75%	248.58	US$ Million	
Spread over LIBOR	4.50%		Debt in Pak Rupees		24,137.49	PKR Million	
Total Interest Rate	4.95%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	248.58	4.84	3.08	243.74	7.92			
2	243.74	4.90	3.02	238.84	7.92			
3	238.84	4.96	2.96	233.88	7.92			
4	233.88	5.02	2.89	228.86	7.92	1.0932	0.6619	1.7550
1st Year		19.72	11.94		31.67			
5	228.86	5.08	2.83	223.77	7.92			
6	223.77	5.15	2.77	218.63	7.92			
7	218.63	5.21	2.71	213.42	7.92			
8	213.42	5.28	2.64	208.14	7.92	1.1483	0.6068	1.7550
2nd Year		20.72	10.95		31.67			
9	208.14	5.34	2.58	202.80	7.92			
10	202.80	5.41	2.51	197.39	7.92			
11	197.39	5.47	2.44	191.92	7.92			
12	191.92	5.54	2.37	186.38	7.92	1.2062	0.5489	1.7550
3rd Year		21.76	9.90		31.67			
13	186.38	5.61	2.31	180.77	7.92			
14	180.77	5.68	2.24	175.09	7.92			
15	175.09	5.75	2.17	169.34	7.92			
16	169.34	5.82	2.10	163.52	7.92	1.2670	0.4880	1.7550
4th Year		22.86	8.81		31.67			
17	163.52	5.89	2.02	157.62	7.92			
18	157.62	5.97	1.95	151.66	7.92			
19	151.66	6.04	1.88	145.62	7.92			
20	145.62	6.11	1.80	139.50	7.92	1.3309	0.4241	1.7550
5th Year		24.01	7.65		31.67			
21	139.50	6.19	1.73	133.31	7.92			
22	133.31	6.27	1.65	127.04	7.92			
23	127.04	6.34	1.57	120.70	7.92			
24	120.70	6.42	1.49	114.28	7.92	1.3980	0.3570	1.7550
6th Year		25.22	6.44		31.67			
25	114.28	6.50	1.41	107.77	7.92			
26	107.77	6.58	1.33	101.19	7.92			
27	101.19	6.66	1.25	94.53	7.92			
28	94.53	6.75	1.17	87.78	7.92	1.4685	0.2865	1.7550
7th Year		26.50	5.17		31.67			
29	87.78	6.83	1.09	80.95	7.92			
30	80.95	6.91	1.00	74.03	7.92			
31	74.03	7.00	0.92	67.03	7.92			
32	67.03	7.09	0.83	59.95	7.92	1.5426	0.2125	1.7550
8th Year		27.83	3.83		31.67			
33	59.95	7.17	0.74	52.77	7.92			
34	52.77	7.26	0.65	45.51	7.92			
35	45.51	7.35	0.56	38.16	7.92			
36	38.16	7.44	0.47	30.71	7.92	1.6204	0.1347	1.7550
9th Year		29.24	2.43		31.67			
37	30.71	7.54	0.38	23.17	7.92			
38	23.17	7.63	0.29	15.54	7.92			
39	15.54	7.72	0.19	7.82	7.92			
40	7.82	7.82	0.10	(0.00)	7.92	1.7021	0.0530	1.7550
10th Year		30.71	0.96		31.67			

Uniform Tariff for Imported Coal based Power Projects for upto 220 MW on Local Financing

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 85%	Total Tariff Rs. /kWh	Total Tariff Cents/kWh
	Oil 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	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.6850	2.2483	4.8034	5.6510	10.5983	10.9148
2	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.7968	2.1364	4.8034	5.6510	10.5983	10.9148
3	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.9269	2.0064	4.8034	5.6510	10.5983	10.9148
4	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.0782	1.8551	4.8034	5.6510	10.5983	10.9148
5	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.2542	1.6791	4.8034	5.6510	10.5983	10.9148
6	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.4589	1.4744	4.8034	5.6510	10.5983	10.9148
7	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.6970	1.2362	4.8034	5.6510	10.5983	10.9148
8	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.9741	0.9592	4.8034	5.6510	10.5983	10.9148
9	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	2.2963	0.6370	4.8034	5.6510	10.5983	10.9148
10	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	2.6711	0.2621	4.8034	5.6510	10.5983	10.9148
11	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
12	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
13	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
14	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
15	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
16	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
17	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
18	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
19	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
20	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
21	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
22	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
23	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
24	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
25	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
26	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
27	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
28	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
29	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
Average																	
1-10	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.4838	1.4494	4.8034	5.6510	10.5983	10.9148
11-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
1-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.4946	0.4831	2.8479	3.3504	8.2977	8.5455
Levelized																	
1-30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.8605	1.0514	3.7820	4.4495	9.3967	9.6774

Levelized Tariff = 9.3967 Rs./kWh 9.6774 Cents/kWh

Annex-1

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	219.780	MWs	US$/PKR Parity		97.10	
Net Capacity	200.000	MWs	Equity	25%	8,665.65	PKR Million
KIBOR	11.91%		Debt	75%	267.73	US$ Million
Spread over KIBOR	3.50%		Debt in Pak Rupees		25,996.94	PKR Million
Total Interest Rate	15.41%					

Period	Principal Million PKR	Principal Repayment Million PKR	Interest Million PKR	Balaance Million PKR	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	25,996.94	283.23	1,001.53	25,713.70	1,284.77			
2	25,713.70	294.15	990.62	25,419.56	1,284.77			
3	25,419.56	305.48	979.29	25,114.08	1,284.77			
4	25,114.08	317.25	967.52	24,796.83	1,284.77	0.6850	2.2483	2.9333
1st Year		**1,200.10**	**3,938.96**		**5,139.07**			
5	24,796.83	329.47	955.30	24,467.36	1,284.77			
6	24,467.36	342.16	942.61	24,125.20	1,284.77			
7	24,125.20	355.34	929.42	23,769.86	1,284.77			
8	23,769.86	369.03	915.73	23,400.83	1,284.77	0.7968	2.1364	2.9333
2nd Year		**1,396.00**	**3,743.06**		**5,139.07**			
9	23,400.83	383.25	901.52	23,017.58	1,284.77			
10	23,017.58	398.01	886.75	22,619.56	1,284.77			
11	22,619.56	413.35	871.42	22,206.22	1,284.77			
12	22,206.22	429.27	855.49	21,776.94	1,284.77	0.9269	2.0064	2.9333
3rd Year		**1,623.88**	**3,515.18**		**5,139.07**			
13	21,776.94	445.81	838.96	21,331.13	1,284.77			
14	21,331.13	462.98	821.78	20,868.15	1,284.77			
15	20,868.15	480.82	803.95	20,387.33	1,284.77			
16	20,387.33	499.34	785.42	19,887.98	1,284.77	1.0782	1.8551	2.9333
4th Year		**1,888.96**	**3,250.11**		**5,139.07**			
17	19,887.98	518.58	766.18	19,369.40	1,284.77			
18	19,369.40	538.56	746.21	18,830.84	1,284.77			
19	18,830.84	559.31	725.46	18,271.53	1,284.77			
20	18,271.53	580.86	703.91	17,690.68	1,284.77	1.2542	1.6791	2.9333
5th Year		**2,197.31**	**2,941.76**		**5,139.07**			
21	17,690.68	603.23	681.53	17,087.45	1,284.77			
22	17,087.45	626.47	658.29	16,460.97	1,284.77			
23	16,460.97	650.61	634.16	15,810.37	1,284.77			
24	15,810.37	675.67	609.09	15,134.69	1,284.77	1.4589	1.4744	2.9333
6th Year		**2,555.98**	**2,583.08**		**5,139.07**			
25	15,134.69	701.70	583.06	14,432.99	1,284.77			
26	14,432.99	728.74	556.03	13,704.26	1,284.77			
27	13,704.26	756.81	527.96	12,947.45	1,284.77			
28	12,947.45	785.97	498.80	12,161.48	1,284.77	1.6970	1.2362	2.9333
7th Year		**2,973.21**	**2,165.85**		**5,139.07**			
29	12,161.48	816.25	468.52	11,345.24	1,284.77			
30	11,345.24	847.69	437.08	10,497.54	1,284.77			
31	10,497.54	880.35	404.42	9,617.20	1,284.77			
32	9,617.20	914.26	370.50	8,702.93	1,284.77	1.9741	0.9592	2.9333
8th Year		**3,458.55**	**1,680.52**		**5,139.07**			
33	8,702.93	949.49	335.28	7,753.45	1,284.77			
34	7,753.45	986.06	298.70	6,767.38	1,284.77			
35	6,767.38	1,024.05	260.71	5,743.33	1,284.77			
36	5,743.33	1,063.50	221.26	4,679.82	1,284.77	2.2963	0.6370	2.9333
9th Year		**4,023.11**	**1,115.96**		**5,139.07**			
37	4,679.82	1,104.48	180.29	3,575.35	1,284.77			
38	3,575.35	1,147.03	137.74	2,428.32	1,284.77			
39	2,428.32	1,191.22	93.55	1,237.11	1,284.77			
40	1,237.11	1,237.11	47.66	(0.00)	1,284.77	2.6711	0.2621	2.9333
10th Year		**4,679.82**	**459.24**		**5,139.07**			

Upfront Tariff for Imported Coal based Power Projects for upto 350 MW on Foreign Financing

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	0.1535	0.1535	0.2276	0.1152	1.1843	1.1490	0.6957	3.6789	4.3281	9.0434	9.3135
2	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.2070	0.6378	3.6789	4.3281	9.0434	9.3135
3	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.2678	0.5769	3.6789	4.3281	9.0434	9.3135
4	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.3318	0.5130	3.6789	4.3281	9.0434	9.3135
5	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.3989	0.4458	3.6789	4.3281	9.0434	9.3135
6	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.4694	0.3753	3.6789	4.3281	9.0434	9.3135
7	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.5435	0.3012	3.6789	4.3281	9.0434	9.3135
8	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.6214	0.2233	3.6789	4.3281	9.0434	9.3135
9	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.7031	0.1416	3.6789	4.3281	9.0434	9.3135
10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.7890	0.0557	3.6789	4.3281	9.0434	9.3135
11	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
12	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
13	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
14	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
15	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
16	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
17	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
18	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
19	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
20	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
21	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
22	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
23	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
24	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
25	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
26	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
27	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
28	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
29	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
Average																	
1-10	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.4481	0.3966	3.6789	4.3281	9.0434	9.3135
11-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
1-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.4827	0.1322	2.4491	2.8813	7.5966	7.8235
Levelized																	
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.9083	0.2941	3.0366	3.5724	**8.2878**	**8.5353**

Levelized Tariff = 8.2878 Rs./kWh 8.5353 Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	350.00	MWs	US$/PKR Parity		97.10	
Net Capacity	318.50	MWs	Equity	25%	13,467.61	PKR Million
LIBOR	0.45%		Debt	75%	416.10	US$ Million
Spread over LIBOR	4.50%		Debt in Pak Rupees		40,402.83	PKR Million
Total Interest Rate	4.95%					

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kWh
1	416.10	8.10	5.15	407.99	13.25			
2	407.99	8.20	5.05	399.79	13.25			
3	399.79	8.30	4.95	391.49	13.25			
4	391.49	8.41	4.84	383.08	13.25	1.1490	0.6957	1.8447
1st Year		33.02	19.99		53.01			
5	383.08	8.51	4.74	374.57	13.25			
6	374.57	8.62	4.64	365.95	13.25			
7	365.95	8.72	4.53	357.23	13.25			
8	357.23	8.83	4.42	348.40	13.25	1.2070	0.6378	1.8447
2nd Year		34.68	18.33		53.01			
9	348.40	8.94	4.31	339.46	13.25			
10	339.46	9.05	4.20	330.41	13.25			
11	330.41	9.16	4.09	321.25	13.25			
12	321.25	9.28	3.98	311.97	13.25	1.2678	0.5769	1.8447
3rd Year		36.43	16.58		53.01			
13	311.97	9.39	3.86	302.58	13.25			
14	302.58	9.51	3.74	293.07	13.25			
15	293.07	9.62	3.63	283.45	13.25			
16	283.45	9.74	3.51	273.70	13.25	1.3318	0.5130	1.8447
4th Year		38.27	14.74		53.01			
17	273.70	9.86	3.39	263.84	13.25			
18	263.84	9.99	3.27	253.85	13.25			
19	253.85	10.11	3.14	243.74	13.25			
20	243.74	10.24	3.02	233.51	13.25	1.3989	0.4458	1.8447
5th Year		40.20	12.81		53.01			
21	233.51	10.36	2.89	223.15	13.25			
22	223.15	10.49	2.76	212.66	13.25			
23	212.66	10.62	2.63	202.04	13.25			
24	202.04	10.75	2.50	191.28	13.25	1.4694	0.3753	1.8447
6th Year		42.22	10.78		53.01			
25	191.28	10.88	2.37	180.40	13.25			
26	180.40	11.02	2.23	169.38	13.25			
27	169.38	11.16	2.10	158.23	13.25			
28	158.23	11.29	1.96	146.93	13.25	1.5435	0.3012	1.8447
7th Year		44.35	8.65		53.01			
29	146.93	11.43	1.82	135.50	13.25			
30	135.50	11.57	1.68	123.92	13.25			
31	123.92	11.72	1.53	112.21	13.25			
32	112.21	11.86	1.39	100.34	13.25	1.6214	0.2233	1.8447
8th Year		46.59	6.42		53.01			
33	100.34	12.01	1.24	88.33	13.25			
34	88.33	12.16	1.09	76.18	13.25			
35	76.18	12.31	0.94	63.87	13.25			
36	63.87	12.46	0.79	51.41	13.25	1.7031	0.1416	1.8447
9th Year		48.94	4.07		53.01			
37	51.41	12.62	0.64	38.79	13.25			
38	38.79	12.77	0.48	26.02	13.25			
39	26.02	12.93	0.32	13.09	13.25			
40	13.09	13.09	0.16	(0.00)	13.25	1.7890	0.0557	1.8447
10th Year		51.41	1.60		53.01			

Uniform Tariff for Imported Coal Based Power Projects for upto 350 MW on Local Financing

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 85%	4 Total Tariff Rs./kWh	1 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	0.1535	0.1535	0.2276	0.1152	1.2756	0.7200	2.3632	5.0087	5.8925	10.6078	10.9247
2	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.8375	2.2457	5.0087	5.8925	10.6078	10.9247
3	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.9743	2.1090	5.0087	5.8925	10.6078	10.9247
4	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.1333	1.9499	5.0087	5.8925	10.6078	10.9247
5	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.3183	1.7649	5.0087	5.8925	10.6078	10.9247
6	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.5335	1.5497	5.0087	5.8925	10.6078	10.9247
7	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.7838	1.2994	5.0087	5.8925	10.6078	10.9247
8	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	2.0750	1.0082	5.0087	5.8925	10.6078	10.9247
9	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	2.4137	0.6695	5.0087	5.8925	10.6078	10.9247
10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	2.8077	0.2755	5.0087	5.8925	10.6078	10.9247
11	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
12	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
13	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
14	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
15	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
16	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
17	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
18	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
19	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
20	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
21	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
22	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
23	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
24	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
25	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
26	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
27	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
28	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
29	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
Average																	
1-10	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.5597	1.5235	5.0087	5.8925	10.6078	10.9247
11-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
1-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.5199	0.5078	2.9532	3.4743	8.1896	8.4342
Levelized																	
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.9045	1.1052	3.9351	4.6295	**9.3449**	9.6240

Levelized Tariff = 9.3449 Rs./kWh 9.6240 Cents/kWh

a. Authority appreciates that market may not offer long-term high CV of coal. Therefore, the Authority decided that the fuel agreements should be flexible enough so that the developer can design their logistic solution on the basis of coal + shipping combination as long as US$ per mmBTU CIF price is not higher than CIF price of reference coal as determine by the Authority.

III. According to HUBCO, The long term contract of shipping will require IPP to make capacity payment to shipping companies. This charge, defined as "Dead Freight" doesn't increase the shipping cost but only carves out a portion of shipping cost into fixed and variable cost. Therefore, for imported coal, Fuel cost component should be divided into fixed and variable cost.

a. Large coal fired power plant around the world are mostly base load plants. The primary reasons are that there are relatively cheaper to operate and that cold, warm and hot start-up not only take time, but also significantly reduce life, efficiency and reliability of the plant. Since the proposed plants are going to be base load therefore, there is no need to have a two part tariff as the power purchaser will have to guarantee a minimum offtake of power at certain plant availability, which in the instant case is 85%. The base load provision therefore, addresses the concern of Coal supplier and IPPs' regarding two part fuel cost component.

IV. Coal can be imported from multiple ports (KPT, Port Qasim, Gwadar) in Pakistan, All open access ports should be allowed. According to HUBCO, if a developer wants to opt for a customized solution involving own investments then the cost should be allowed as long as the overall impact on price is no more than the most feasible open access option available.

a. [HUBCO's suggestion is valid therefore, the Authority decided to allow the developer to have customized solutions involving own investments as long as the overall impact on price is no more than the most feasible open access option available]

V. HUBCO stated that Debt Servicing Reserve Account (DSRA) has invariably become a requirement for all project finance transactions. Hence DSRA impact needs to be built as a separate component in the ROE calculations of upfront tariff. In the absence of ROE adjusted for DSRA, the effective IRR is reduced. And that the coal supplier would require the commitment of the IPP to pay in time and offtake the quantities in compliance with

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CSA and such commitments need to be backed by monetary instruments such as Standby letter of Credit (SBLC). This would necessitate Fuel Payment Reserve account (FPRA).

VI. HUBCO stated that 90-day inventory recommended in Upfront Tariff is the inventory to be maintained on site to create a buffer due to port handling and shipping requirement involved between FOB and Gate Delivery. Additionally, there will be some inventory in transit during shipping and relevant working capital will be stuck in funding such inventory. In addition, LCs will have to be opened for international trade. HUBCO thus, recommended to build a 2% margin over fuel price to pay for LC and inventory in-transit funding costs.

a. With regards to all the above points raised by HUBCO, the Authority noted that 70% of the capacity charges are paid in advance on a monthly basis that including a substantial portion of Debt servicing and ROE component. However, IPP further pays debt servicing to lenders usually on quarterly or biannual basis. This create sufficient cash flows in between wherein, the IPPs can adequately address cash flow concerns resulting out of either DSRA/ FPRA or LC charges. Therefore, adding cost on account of DSRA/FPRA is unjustified and against the consumers' interest. Moreover, HUBCO needs to be cognizant of the fact that, it is an upfront proceeding and not cost plus. Upfront tariff is an overall package wherein, sufficient room has been given to cope with the eventualities including the cost/fee which HUBCO is requesting. Therefore, HUBCO inclusion of the above mentioned cost/charges doesn't merit Authority's reconsiderations.

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VII. HUBCO asserted that the long-term CSA will require minimum coal offtake commitment by IPP. This means IPP will have to pay LD to coal supplier if it is not able to offtake minimum quantity. In case of NTDC default on account of non-payment or if the plant is changed from base to lower load operation, then such LD should be transferred to power purchase. Such LDs should be pass through for which a mechanism needs to be included.

a. This issue needs to be addressed in the PPA with the power purchaser.

VIII. Riaz Ahmad and Company has stated that noncoastal coal power project similar to the one proposed in Punjab would be linked with rail network so the rail siding and infrastructure cost from nearest track to the site has to be borne by the Railways (through its freight

tariff) or the power producer. This must be confirmed by NEPRA to avoid ambiguity in future as this cost is quite handsome as Right of Way payments for land acquisition and rail infrastructure to be borne by one or another party. Similarly in project cost calculation the rail infrastructure required in the project boundary for unloading of coal is to be calculated and included in project cost if not yet done.

a. Most of the large coal fired plants around the world are established around the coast primary because of ease of access to abundant water resource and because coastal projects avoid costly road/rail transportations. The Authority noted that some investors, including government of Punjab have shown interest in developing large coal power plants in Punjab. During discussion on the subject, it came to the Authority's notice, that currently neither there are sufficient railway tracks nor enough railway carriages to cater a typical SC unit. So significant Capex is expected to be incurred in this regard. Keeping in view these factors, including long distance from port to proposed power plant to mid-country, the transportation is going to be a significant portion of the total fuel cost. By some estimate it might be as high as 80$ per ton for the first 10 years. Fuel is a pass through item including its transportation cost, at the outset, the Authority can't oppose having an option of in land coal transportation. However, the Authority is cognizant that cost even though is a pass through, it has to be reviewed keeping in view alternative arrangement for project location, size and that alternative transportation options have been exhausted to the benefit of achieving optimal tariff. At this stage the Authority in principle has no objection of allowing inland coal transportation from port to the potential power plant. However, all such plants proposing to be built on noncoastal area comprising significant inland coal transportation cost must ensure that alternative location of plant have been looked into.

56. Order

I. The Authority hereby determines and approves the following upfront tariff and adjustments/indexations for imported/local coal power generation for delivery of electricity to the power purchaser:

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Table - XV

Capacity Charge 1-10 Years	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour
220 MW	3.5384	4.8034	3.4999	4.7719
350 MW	3.6789	5.0087	3.6517	4.9887
660 MW	3.4731	4.8873	3.4529	4.8805
1099 MW	3.2428	4.5597	3.2186	4.5478

Capacity Charge 11-30 Years	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour	Rs./kW/Hour
220 MW	1.7833	1.8701	1.7449	1.8386
350 MW	1.8342	1.9254	1.8070	1.9055
660 MW	1.8040	1.9589	1.7837	1.9521
1099 MW	1.6885	1.8329	1.6643	1.8211

Table - XVI

Energy Charge 1-30 Years	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
220 MW	4.9473	4.9473	4.6157	4.6157
350 MW	4.7153	4.7153	4.4008	4.4008
660 MW	4.7153	4.7153	4.4008	4.4008
1099 MW	4.6080	4.6080	4.3013	4.3013

i. The Tariff Tables & Debt Service Schedules for each project are attached as Annexes to this determination.

ii. The tariff period is 30 Years.

iii. In case of power complex of 1320 MW (660 MW×2), 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. Same will be applicable for other combinations.

II. **Basis for Determination**

The above tariff is worked out on the following basis:

i. **Design Coal (Quality of Coal)**

a. In Pakistan calorific value of coal is as follows:

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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

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

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ii. **Plant Size**

a. The upfront tariff has been determined for the plants of following sizes;

220 MW Gross	200 MW Net
350 MW Gross	322 MW Net
660 MW Gross	607 MW Net
1,099 MW Gross	1,011 MW Net

b. 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;

a. Should be near the load center.

b. Near the source of fuel in case of local coal and near the coastal area in case of imported coal.

c. 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 9% for 220MW and 8% for other capacities.

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**

a. 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.

b. The following capital cost for coal based power projects 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.

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220 MW	US$ 271.803 Million
350 MW	US$ 454.974 Million
660 MW	US$ 767.868 Million
1,099 MW & above	US$ 1,191.670 Million

c. 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.

viii. **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% * ΔSI) + (CC(0) * 38% * ΔEI) + (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

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Note: Breakup of capital cost indicated in the above formula has been taken from New Coal-Fired Power Plant Performance and Cost Estimates (SI-009808) by Sargent & Lundy and International Energy Agency; Coal Industry Advisory Board (Ian M. Torrens & William C. Stenzel)

ix. **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

available TT&OD selling rate and KIBOR notified by the National Bank of Pakistan and Reuters for the purpose of LIBOR.

(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.

xiii. **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.

xiv. **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.

xv. **Interest During Construction (IDC)**

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

Table - XVII

Year	220 MW	350 MW	660MW	1099 MW
1st Year	33.33%	33.33%	33.33%	33.33%
2nd Year	33.33%	33.33%	33.33%	33.33%
3rd Year	20.00%	20.00%	13.33%	13.33%
4th Year	13.33%	13.33%	20.00%	20.00%

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

c. 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.

d. In case of more than one financing plans, separate IDC shall be calculated for each plan on reference parameters.

e. 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.

xvi. **Summary of Project Cost**

The following project costs have been assumed for different projects 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:

Table - XVIII

Description	220MW		350MW		660MW		1099MW	
	F. Fin. US$ Mlns	L. Fin. US$ Mlns	F. Fin. US$ Mlns	L. Fin. US$ Mlns	F. Fin. US$ Mlns	L. Fin. US$ Mlns	F. Fin. US$ Mlns	L. Fin. US$ Mlns
Capital Cost	271.8	271.8	455.0	455.0	767.9	767.9	1,191.7	1,191.7
Custom Duties & Cess	10.8	10.8	18.1	18.1	30.5	30.5	47.3	47.3
Sub-Total	**282.6**	**282.6**	**473.0**	**473.0**	**798.4**	**798.4**	**1,239.0**	**1,239.0**
Financial Charges:								
Financing Fees & Charges	7.4	7.4	12.4	12.4	21.0	21.0	32.5	32.5
Sino sure Fee	22.2	-	37.1	-	63.9	-	99.2	-
IDC	19.3	67.0	32.2	112.1	72.8	261.6	113.0	405.9
Sub-Total	**48.8**	**74.4**	**81.7**	**124.5**	**157.7**	**282.5**	**244.7**	**438.5**
Total	**331.4**	**357.0**	**554.8**	**597.5**	**956.1**	**1,080.9**	**1,483.7**	**1,677.5**

xvii. **Return on Equity (ROE)**

The Return on Equity shall be:

a. 29.50% and 26.50% per annum for the projects on local coal for construction period of 48 months and 40 months respectively.

b. 27.20% and 24.50% per annum for the projects on imported coal for construction period of 48 months and 40 months respectively.

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c. In case of use of mix coal the ROE will be adjusted according to the following formula;

ROE(Mix)	=	ROE(L)×((Q(L)×CV(L))/ (Q(L)×CV(L) + Q(I)×CV(I)))+ ROE(I)×((Q(I)×CV(I))/(Q(L)×CV(L) + Q(I)×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
ROE(I)	=	Return on Equity component on 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. **Thermal Efficiency**

a. The following minimum reference net LHV thermal efficiencies have been established for calculating reference fuel cost component;

200MW net capacity (at mean site conditions)	37%
322MW net capacity (at mean site conditions)	39%
607MW net capacity (at mean site conditions)	39%
1011MW net capacity (at mean site conditions)	40%

b. 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.

Table - XIX

Gross MW	Efficiency net (LHV) achieved At COD	Sharing Ratio Power Purchaser : Sponsor
220	37% (min)	100% : 0%
350/660	39% (min)	100% : 0%
1099	40% (min)	100% : 0%

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220	37.01% - 37.50%	70% : 30%
350/660	39.01% - 39.50%	70% : 30%
1099	40.01% - 40.50%	70% : 30%
220	37.51% - 38.00%	50% : 50%
350/660	39.51% - 40.00%	50% : 50%
1099	40.51% - 41.00%	50% : 50%
220	38.01% - 38.50%	30% : 70%
350/660	40.01% - 40.50%	30% : 70%
1099	41.01% - 41.50%	30% : 70%
220	>38.5%	0% : 100%
350/660	>40.5%	0% : 100%
1099	>41.5%	0% : 100%

xix. **Price of Coal**

a. The following reference coal price has been used for determining the upfront tariff;

Table - XX

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.

xx. **Local Coal (sub-bituminous)**

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

b. 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.

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c. The basis of coal price shall be provided in the Power Purchase Agreement.

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

xxi. **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.

xxii. **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 premiums used in the calculation of insurance component of tariff are as under:

Table - XXI

Description	220 MW	350MW	660 MW	1199 MW
Ref. Insurance Premium (Rs. Mlns)	192.34	321.53	542.65	842.15

xxiii. **Interest on Working Capital**

a. 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. In case of local coal the inventory will be equivalent to 30 days at 100% plant load.

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

b. 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.

c. 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)×((Q(L)×CV(L))/ (Q(L)×CV(L) + Q(I)×CV(I)))+
IWC(I)×((Q(I)×CV(I))/(Q(L)×CV(L) + Q(I)×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

xxiv. **Operation and Maintenance (O & M) Expenses**

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

b. Reference O&M expenses shall be;

Rs.421 per MWh for a plant of 220/350MW
Rs.401 per MWh for a plant of 660MW
Rs.380 per MWh for a plant of 1099MW

c. The following shall be the breakup of O&M expenses for the different plant size:

Plant Size	Fixed O&M	Variable O&M
220/350 MW	Rs.0.307/kW/h	Rs.0.114/kWh
660 MW	Rs.0.287/kW/h	Rs.0.114/kWh
1099 MW	Rs.0.266/kW/h	Rs.0.114/kWh

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d. 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.

e. 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.

f. The reference WPI and US CPI will be of June 2014.

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

Table - XXII

Cost of Lime	
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

h. The cost Lime Stone and As Disposal will be adjusted on actual basis at the time of COD.

xxv. **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 Globalcoal
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 Globalcoal
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 Globalcoal
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 –

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

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

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

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

v. Opening fuel stock quantity (tons),

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

vii. 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:

i. **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

ii. **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);

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V. **Tariff Design**

i. 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.

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

iii. 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:**

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

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

iii. 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**

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

ii. 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.

iii. 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, Japanese 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:

Table - XXIII

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 Loan)	US$/Euro/Yen/Pound to Pak Rupees (based on borrowing by the Company)

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Table - XXIII

Tariff Components	Tariff Indexation & Adjustment
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.

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 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**

i. "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;

ii. "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;

iii. "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.

iv. "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;

v. "Grace Period" means a period equivalent to the construction period of the coal project.

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vi. "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;

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

viii. "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;

ix. "Project" means a generating facility or the evacuation system up to inter-connection point;

x. "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.

xi. '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;

xii. "Year" means a period of 12 months.

XIII. The above order along with Annexes will be notified in the official Gazette in accordance with section 31(4) of NEPRA Act 1997, the details of annexes are as under:

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Table - XXIV

Annex-1	**Reference Tariff Table 220MW Imported Coal Foreign Financing**
Annex-1A	Debt Repayment Schedule
Annex-2	**Reference Tariff Table 220MW Imported Coal Local Financing**
Annex-2A	Debt Repayment Schedule
Annex-3	**Reference Tariff Table 350MW Imported Coal Foreign Financing**
Annex-3A	Debt Repayment Schedule
Annex-4	**Reference Tariff Table 350MW Imported Coal Local Financing**
Annex-4A	Debt Repayment Schedule
Annex-5	**Reference Tariff Table 660MW Imported Coal Foreign Financing**
Annex-5A	Debt Repayment Schedule
Annex-6	**Reference Tariff Table 660MW Imported Coal Local Financing**
Annex-6A	Debt Repayment Schedule
Annex-7	**Reference Tariff Table 1099MW Imported Coal Foreign Financing**
Annex-7A	Debt Repayment Schedule
Annex-8	**Reference Tariff Table 1099MW Imported Coal Local Financing**
Annex-8A	Debt Repayment Schedule
Annex-9	**Reference Tariff Table 220MW Local Coal Foreign Financing**
Annex-9A	Debt Repayment Schedule
Annex-10	**Reference Tariff Table 220MW Local Coal Local Financing**
Annex-10A	Debt Repayment Schedule
Annex-11	**Reference Tariff Table 350MW Local Coal Foreign Financing**
Annex-11A	Debt Repayment Schedule
Annex-12	**Reference Tariff Table 350MW Local Coal Local Financing**
Annex-12A	Debt Repayment Schedule
Annex-13	**Reference Tariff Table 660MW Local Coal Foreign Financing**
Annex-13A	Debt Repayment Schedule
Annex-14	**Reference Tariff Table 660MW Local Coal Local Financing**
Annex-14A	Debt Repayment Schedule
Annex-15	**Reference Tariff Table 1099MW Local Coal Foreign Financing**
Annex-15A	Debt Repayment Schedule
Annex-16	**Reference Tariff Table 1099MW Local Coal Local Financing**
Annex-16A	Debt Repayment Schedule
Annex-17	**Summary of Upfront Coal Tariff**

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Authority

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Khawaja Muhammad Naeem
Member

29/6/14

Major (Retd.) Haroon Rashid
Member

26/6/2014.

Habibullah Khilji
Member / Vice Chairman

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NEPRA AUTHORITY

26.06.14

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	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.0932	0.6619	3.5384	4.1628	9.1100	9.3821
2	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.1483	0.6068	3.5384	4.1628	9.1100	9.3821
3	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.2062	0.5489	3.5384	4.1628	9.1100	9.3821
4	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.2670	0.4880	3.5384	4.1628	9.1100	9.3821
5	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.3309	0.4241	3.5384	4.1628	9.1100	9.3821
6	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.3980	0.3570	3.5384	4.1628	9.1100	9.3821
7	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.4685	0.2865	3.5384	4.1628	9.1100	9.3821
8	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.5426	0.2125	3.5384	4.1628	9.1100	9.3821
9	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.6204	0.1347	3.5384	4.1628	9.1100	9.3821
10	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.7021	0.0530	3.5384	4.1628	9.1100	9.3821
11	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
12	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
13	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
14	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
15	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
16	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
17	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
18	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
19	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
20	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
21	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
22	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
23	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
24	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
25	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
26	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
27	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
28	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
29	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
Average																	
1-10	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	1.3777	0.3773	3.5384	4.1628	9.1100	9.3821
11-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.0000	0.0000	1.7833	2.0980	7.0453	7.2557
1-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.4592	0.1258	2.3683	2.7863	7.7335	7.9645
Levelized																	
1-30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.1267	0.8642	0.2798	2.9273	3.4438	8.3911	8.6417

Levelized Tariff = 8.3911 Rs./kWh 8.6417 Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	219.78	MWs	US$/PKR Parity		97.10		
Net Capacity	200.00	MWs	Equity	25%	8,045.83	PKR Million	
LIBOR	0.45%		Debt	75%	248.58	US$ Million	
Spread over LIBOR	4.50%		Debt in Pak Rupees		24,137.49	PKR Million	
Total Interest Rate	4.95%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	248.58	4.84	3.08	243.74	7.92			
2	243.74	4.90	3.02	238.84	7.92			
3	238.84	4.96	2.96	233.88	7.92			
4	233.88	5.02	2.89	228.86	7.92	1.0932	0.6619	1.7550
1st Year		19.72	11.94		31.67			
5	228.86	5.08	2.83	223.77	7.92			
6	223.77	5.15	2.77	218.63	7.92			
7	218.63	5.21	2.71	213.42	7.92			
8	213.42	5.28	2.64	208.14	7.92	1.1483	0.6068	1.7550
2nd Year		20.72	10.95		31.67			
9	208.14	5.34	2.58	202.80	7.92			
10	202.80	5.41	2.51	197.39	7.92			
11	197.39	5.47	2.44	191.92	7.92			
12	191.92	5.54	2.37	186.38	7.92	1.2062	0.5489	1.7550
3rd Year		21.76	9.90		31.67			
13	186.38	5.61	2.31	180.77	7.92			
14	180.77	5.68	2.24	175.09	7.92			
15	175.09	5.75	2.17	169.34	7.92			
16	169.34	5.82	2.10	163.52	7.92	1.2670	0.4880	1.7550
4th Year		22.86	8.81		31.67			
17	163.52	5.89	2.02	157.62	7.92			
18	157.62	5.97	1.95	151.66	7.92			
19	151.66	6.04	1.88	145.62	7.92			
20	145.62	6.11	1.80	139.50	7.92	1.3309	0.4241	1.7550
5th Year		24.01	7.65		31.67			
21	139.50	6.19	1.73	133.31	7.92			
22	133.31	6.27	1.65	127.04	7.92			
23	127.04	6.34	1.57	120.70	7.92			
24	120.70	6.42	1.49	114.28	7.92	1.3980	0.3570	1.7550
6th Year		25.22	6.44		31.67			
25	114.28	6.50	1.41	107.77	7.92			
26	107.77	6.58	1.33	101.19	7.92			
27	101.19	6.66	1.25	94.53	7.92			
28	94.53	6.75	1.17	87.78	7.92	1.4685	0.2865	1.7550
7th Year		26.50	5.17		31.67			
29	87.78	6.83	1.09	80.95	7.92			
30	80.95	6.91	1.00	74.03	7.92			
31	74.03	7.00	0.92	67.03	7.92			
32	67.03	7.09	0.83	59.95	7.92	1.5426	0.2125	1.7550
8th Year		27.83	3.83		31.67			
33	59.95	7.17	0.74	52.77	7.92			
34	52.77	7.26	0.65	45.51	7.92			
35	45.51	7.35	0.56	38.16	7.92			
36	38.16	7.44	0.47	30.71	7.92	1.6204	0.1347	1.7550
9th Year		29.24	2.43		31.67			
37	30.71	7.54	0.38	23.17	7.92			
38	23.17	7.63	0.29	15.54	7.92			
39	15.54	7.72	0.19	7.82	7.92			
40	7.82	7.82	0.10	(0.00)	7.92	1.7021	0.0530	1.7550
10th Year		30.71	0.96		31.67			

Uniform Tariff for Imported Coal based Power Projects for upto 220 MW on Local Financing

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 85%	Total Tariff Rs./kWh	Total Tariff Cents/kWh
	Coal 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	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.6850	2.2483	4.8034	5.6510	10.5983	10.9148
2	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.7968	2.1364	4.8034	5.6510	10.5983	10.9148
3	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.9269	2.0064	4.8034	5.6510	10.5983	10.9148
4	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.0782	1.8551	4.8034	5.6510	10.5983	10.9148
5	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.2542	1.6791	4.8034	5.6510	10.5983	10.9148
6	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.4589	1.4744	4.8034	5.6510	10.5983	10.9148
7	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.6970	1.2362	4.8034	5.6510	10.5983	10.9148
8	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.9741	0.9592	4.8034	5.6510	10.5983	10.9148
9	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	2.2963	0.6370	4.8034	5.6510	10.5983	10.9148
10	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	2.6711	0.2621	4.8034	5.6510	10.5983	10.9148
11	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
12	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
13	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
14	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
15	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
16	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
17	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
18	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
19	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
20	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
21	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
22	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
23	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
24	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
25	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
26	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
27	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
28	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
29	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
Average																	
1-10	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	1.4838	1.4494	4.8034	5.6510	10.5983	10.9148
11-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.0000	0.0000	1.8701	2.2001	7.1474	7.3609
1-30	4.5233			0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.4946	0.4831	2.8479	3.3504	8.2977	8.5455
Levelized																	
1-30	4.5233	0.2200	0.0900	0.0684	0.0456	4.9473	0.1535	0.1535	0.2400	0.1096	1.2135	0.8605	1.0514	3.7820	4.4495	9.3967	9.6774

Levelized Tariff = 9.3967 Rs./kWh 9.6774 Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	219.780	MWs	US$/PKR Parity		97.10	
Net Capacity	200.000	MWs	Equity	25%	8,665.65	PKR Million
KIBOR	11.91%		Debt	75%	267.73	US$ Million
Spread over KIBOR	3.50%		Debt in Pak Rupees		25,996.94	PKR Million
Total Interest Rate	15.41%					

Period	Principal Million PKR	Principal Repayment Million PKR	Interest Million PKR	Balaance Million PKR	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	25,996.94	283.23	1,001.53	25,713.70	1,284.77			
2	25,713.70	294.15	990.62	25,419.56	1,284.77			
3	25,419.56	305.48	979.29	25,114.08	1,284.77			
4	25,114.08	317.25	967.52	24,796.83	1,284.77	0.6850	2.2483	2.9333
1st Year		1,200.10	3,938.96		5,139.07			
5	24,796.83	329.47	955.30	24,467.36	1,284.77			
6	24,467.36	342.16	942.61	24,125.20	1,284.77			
7	24,125.20	355.34	929.42	23,769.86	1,284.77			
8	23,769.86	369.03	915.73	23,400.83	1,284.77	0.7968	2.1364	2.9333
2nd Year		1,396.00	3,743.06		5,139.07			
9	23,400.83	383.25	901.52	23,017.58	1,284.77			
10	23,017.58	398.01	886.75	22,619.56	1,284.77			
11	22,619.56	413.35	871.42	22,206.22	1,284.77			
12	22,206.22	429.27	855.49	21,776.94	1,284.77	0.9269	2.0064	2.9333
3rd Year		1,623.88	3,515.18		5,139.07			
13	21,776.94	445.81	838.96	21,331.13	1,284.77			
14	21,331.13	462.98	821.78	20,868.15	1,284.77			
15	20,868.15	480.82	803.95	20,387.33	1,284.77			
16	20,387.33	499.34	785.42	19,887.98	1,284.77	1.0782	1.8551	2.9333
4th Year		1,888.96	3,250.11		5,139.07			
17	19,887.98	518.58	766.18	19,369.40	1,284.77			
18	19,369.40	538.56	746.21	18,830.84	1,284.77			
19	18,830.84	559.31	725.46	18,271.53	1,284.77			
20	18,271.53	580.86	703.91	17,690.68	1,284.77	1.2542	1.6791	2.9333
5th Year		2,197.31	2,941.76		5,139.07			
21	17,690.68	603.23	681.53	17,087.45	1,284.77			
22	17,087.45	626.47	658.29	16,460.97	1,284.77			
23	16,460.97	650.61	634.16	15,810.37	1,284.77			
24	15,810.37	675.67	609.09	15,134.69	1,284.77	1.4589	1.4744	2.9333
6th Year		2,555.98	2,583.08		5,139.07			
25	15,134.69	701.70	583.06	14,432.99	1,284.77			
26	14,432.99	728.74	556.03	13,704.26	1,284.77			
27	13,704.26	756.81	527.96	12,947.45	1,284.77			
28	12,947.45	785.97	498.80	12,161.48	1,284.77	1.6970	1.2362	2.9333
7th Year		2,973.21	2,165.85		5,139.07			
29	12,161.48	816.25	468.52	11,345.24	1,284.77			
30	11,345.24	847.69	437.08	10,497.54	1,284.77			
31	10,497.54	880.35	404.42	9,617.20	1,284.77			
32	9,617.20	914.26	370.50	8,702.93	1,284.77	1.9741	0.9592	2.9333
8th Year		3,458.55	1,680.52		5,139.07			
33	8,702.93	949.49	335.28	7,753.45	1,284.77			
34	7,753.45	986.06	298.70	6,767.38	1,284.77			
35	6,767.38	1,024.05	260.71	5,743.33	1,284.77			
36	5,743.33	1,063.50	221.26	4,679.82	1,284.77	2.2963	0.6370	2.9333
9th Year		4,023.11	1,115.96		5,139.07			
37	4,679.82	1,104.48	180.29	3,575.35	1,284.77			
38	3,575.35	1,147.03	137.74	2,428.32	1,284.77			
39	2,428.32	1,191.22	93.55	1,237.11	1,284.77			
40	1,237.11	1,237.11	47.66	(0.00)	1,284.77	2.6711	0.2621	2.9333
10th Year		4,679.82	459.24		5,139.07			

Uniform Tariff for Imported Coal based Power Projects for upto 350 MW on Foreign Financing

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	0.1535	0.1535	0.2276	0.1152	1.1843	1.1490	0.6957	3.6789	4.3281	9.0434	9.3135
2	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.2070	0.6378	3.6789	4.3281	9.0434	9.3135
3	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.2678	0.5769	3.6789	4.3281	9.0434	9.3135
4	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.3318	0.5130	3.6789	4.3281	9.0434	9.3135
5	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.3989	0.4458	3.6789	4.3281	9.0434	9.3135
6	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.4694	0.3753	3.6789	4.3281	9.0434	9.3135
7	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.5435	0.3012	3.6789	4.3281	9.0434	9.3135
8	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.6214	0.2233	3.6789	4.3281	9.0434	9.3135
9	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.7031	0.1416	3.6789	4.3281	9.0434	9.3135
10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.7890	0.0557	3.6789	4.3281	9.0434	9.3135
11	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
12	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
13	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
14	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
15	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
16	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
17	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
18	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
19	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
20	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
21	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
22	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
23	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
24	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
25	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
26	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
27	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
28	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
29	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
Average																	
1-10	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	1.4481	0.3966	3.6789	4.3281	9.0434	9.3135
11-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.0000	0.0000	1.8342	2.1579	6.8732	7.0784
1-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.4827	0.1322	2.4491	2.8813	7.5966	7.8235
Levelized																	
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.1843	0.9083	0.2941	3.0366	3.5724	**8.2878**	**8.5353**

Levelized Tariff = 8.2878 Rs./kWh 8.5353 Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	350.00	MWs	US$/PKR Parity		97.10		
Net Capacity	318.50	MWs	Equity	25%	13,467.61	PKR Million	
LIBOR	0.45%		Debt	75%	416.10	US$ Million	
Spread over LIBOR	4.50%		Debt in Pak Rupees		40,402.83	PKR Million	
Total Interest Rate	4.95%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	416.10	8.10	5.15	407.99	13.25			
2	407.99	8.20	5.05	399.79	13.25			
3	399.79	8.30	4.95	391.49	13.25			
4	391.49	8.41	4.84	383.08	13.25	1.1490	0.6957	1.8447
1st Year		33.02	19.99		53.01			
5	383.08	8.51	4.74	374.57	13.25			
6	374.57	8.62	4.64	365.95	13.25			
7	365.95	8.72	4.53	357.23	13.25			
8	357.23	8.83	4.42	348.40	13.25	1.2070	0.6378	1.8447
2nd Year		34.68	18.33		53.01			
9	348.40	8.94	4.31	339.46	13.25			
10	339.46	9.05	4.20	330.41	13.25			
11	330.41	9.16	4.09	321.25	13.25			
12	321.25	9.28	3.98	311.97	13.25	1.2678	0.5769	1.8447
3rd Year		36.43	16.58		53.01			
13	311.97	9.39	3.86	302.58	13.25			
14	302.58	9.51	3.74	293.07	13.25			
15	293.07	9.62	3.63	283.45	13.25			
16	283.45	9.74	3.51	273.70	13.25	1.3318	0.5130	1.8447
4th Year		38.27	14.74		53.01			
17	273.70	9.86	3.39	263.84	13.25			
18	263.84	9.99	3.27	253.85	13.25			
19	253.85	10.11	3.14	243.74	13.25			
20	243.74	10.24	3.02	233.51	13.25	1.3989	0.4458	1.8447
5th Year		40.20	12.81		53.01			
21	233.51	10.36	2.89	223.15	13.25			
22	223.15	10.49	2.76	212.66	13.25			
23	212.66	10.62	2.63	202.04	13.25			
24	202.04	10.75	2.50	191.28	13.25	1.4694	0.3753	1.8447
6th Year		42.22	10.78		53.01			
25	191.28	10.88	2.37	180.40	13.25			
26	180.40	11.02	2.23	169.38	13.25			
27	169.38	11.16	2.10	158.23	13.25			
28	158.23	11.29	1.96	146.93	13.25	1.5435	0.3012	1.8447
7th Year		44.35	8.65		53.01			
29	146.93	11.43	1.82	135.50	13.25			
30	135.50	11.57	1.68	123.92	13.25			
31	123.92	11.72	1.53	112.21	13.25			
32	112.21	11.86	1.39	100.34	13.25	1.6214	0.2233	1.8447
8th Year		46.59	6.42		53.01			
33	100.34	12.01	1.24	88.33	13.25			
34	88.33	12.16	1.09	76.18	13.25			
35	76.18	12.31	0.94	63.87	13.25			
36	63.87	12.46	0.79	51.41	13.25	1.7031	0.1416	1.8447
9th Year		48.94	4.07		53.01			
37	51.41	12.62	0.64	38.79	13.25			
38	38.79	12.77	0.48	26.02	13.25			
39	26.02	12.93	0.32	13.09	13.25			
40	13.09	13.09	0.16	(0.00)	13.25	1.7890	0.0557	1.8447
10th Year		51.41	1.60		53.01			

Upfront Tariff for Imported Coal based Power Projects for upto 350 MW on Local Financing

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	0.1535	0.1535	0.2276	0.1152	1.2756	0.7200	2.3632	5.0087	5.8925	10.6078	10.9247
2	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.8375	2.2457	5.0087	5.8925	10.6078	10.9247
3	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.9743	2.1090	5.0087	5.8925	10.6078	10.9247
4	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.1333	1.9499	5.0087	5.8925	10.6078	10.9247
5	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.3183	1.7649	5.0087	5.8925	10.6078	10.9247
6	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.5335	1.5497	5.0087	5.8925	10.6078	10.9247
7	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.7838	1.2994	5.0087	5.8925	10.6078	10.9247
8	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	2.0750	1.0082	5.0087	5.8925	10.6078	10.9247
9	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	2.4137	0.6695	5.0087	5.8925	10.6078	10.9247
10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	2.8077	0.2755	5.0087	5.8925	10.6078	10.9247
11	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
12	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
13	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
14	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
15	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
16	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
17	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
18	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
19	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
20	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
21	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
22	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
23	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
24	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
25	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
26	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
27	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
28	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
29	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
Average																	
1-10	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	1.5597	1.5235	5.0087	5.8925	10.6078	10.9247
11-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.0000	0.0000	1.9254	2.2652	6.9805	7.1890
1-30	4.2913			0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.5199	0.5078	2.9532	3.4743	8.1896	8.4342
Levelized																	
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1535	0.1535	0.2276	0.1152	1.2756	0.9045	1.1052	3.9351	4.6295	9.3449	9.6240

Levelized Tariff = 9.3449 Rs./kWh 9.6240 Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	350.00	MWs	US$/PKR Parity		97.10		
Net Capacity	318.50	MWs	Equity	25%	14,505.51	PKR Million	
KIBOR	11.91%		Debt	75%	448.16	US$ Million	
Spread over KIBOR	3.50%		Debt in Pak Rupees		43,516.53	PKR Million	
Total Interest Rate	15.41%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	448.16	4.88	17.27	443.28	22.15			
2	443.28	5.07	17.08	438.21	22.15			
3	438.21	5.27	16.88	432.94	22.15			
4	432.94	5.47	16.68	427.47	22.15	0.7200	2.3632	3.0832
1st Year		20.69	67.90		88.59			
5	427.47	5.68	16.47	421.79	22.15			
6	421.79	5.90	16.25	415.90	22.15			
7	415.90	6.13	16.02	409.77	22.15			
8	409.77	6.36	15.79	403.41	22.15	0.8375	2.2457	3.0832
2nd Year		24.07	64.53		88.59			
9	403.41	6.61	15.54	396.80	22.15			
10	396.80	6.86	15.29	389.94	22.15			
11	389.94	7.13	15.02	382.81	22.15			
12	382.81	7.40	14.75	375.41	22.15	0.9743	2.1090	3.0832
3rd Year		27.99	60.60		88.59			
13	375.41	7.69	14.46	367.73	22.15			
14	367.73	7.98	14.17	359.75	22.15			
15	359.75	8.29	13.86	351.46	22.15			
16	351.46	8.61	13.54	342.85	22.15	1.1333	1.9499	3.0832
4th Year		32.56	56.03		88.59			
17	342.85	8.94	13.21	333.91	22.15			
18	333.91	9.28	12.86	324.63	22.15			
19	324.63	9.64	12.51	314.98	22.15			
20	314.98	10.01	12.13	304.97	22.15	1.3183	1.7649	3.0832
5th Year		37.88	50.71		88.59			
21	304.97	10.40	11.75	294.57	22.15			
22	294.57	10.80	11.35	283.77	22.15			
23	283.77	11.22	10.93	272.56	22.15			
24	272.56	11.65	10.50	260.91	22.15	1.5335	1.5497	3.0832
6th Year		44.06	44.53		88.59			
25	260.91	12.10	10.05	248.81	22.15			
26	248.81	12.56	9.59	236.25	22.15			
27	236.25	13.05	9.10	223.20	22.15			
28	223.20	13.55	8.60	209.65	22.15	1.7838	1.2994	3.0832
7th Year		51.25	37.34		88.59			
29	209.65	14.07	8.08	195.58	22.15			
30	195.58	14.61	7.53	180.97	22.15			
31	180.97	15.18	6.97	165.79	22.15			
32	165.79	15.76	6.39	150.03	22.15	2.0750	1.0082	3.0832
8th Year		59.62	28.97		88.59			
33	150.03	16.37	5.78	133.66	22.15			
34	133.66	17.00	5.15	116.66	22.15			
35	116.66	17.65	4.49	99.01	22.15			
36	99.01	18.33	3.81	80.68	22.15	2.4137	0.6695	3.0832
9th Year		69.35	19.24		88.59			
37	80.68	19.04	3.11	61.64	22.15			
38	61.64	19.77	2.37	41.86	22.15			
39	41.86	20.54	1.61	21.33	22.15			
40	21.33	21.33	0.82	0.00	22.15	2.8077	0.2755	3.0832
10th Year		80.68	7.92		88.59			

Upfront Tariff for Imported Coal based Power Projects for upto 660 MW on Foreign Financing

Annex - 5

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	0.6285	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			0.0684	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			0.0684	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			0.0684	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

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Upfront Tariff - Debt Servicing on Foreign Financing

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	8.53	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	1.4671	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**			

Upfront Tariff for Imported Coal based Power Projects for upto 660 MW on Local Financing

Annex - 6

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)										
	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	Capacity Charge @ 85%	Total Tariff Rs./kWh	Total Tariff Cents/kWh
1	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.6839	2.2445	4.8873	5.7497	10.4650	10.7776
2	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.7955	2.1329	4.8873	5.7497	10.4650	10.7776
3	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.9253	2.0030	4.8873	5.7497	10.4650	10.7776
4	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	1.0764	1.8520	4.8873	5.7497	10.4650	10.7776
5	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	1.2521	1.6763	4.8873	5.7497	10.4650	10.7776
6	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	1.4565	1.4719	4.8873	5.7497	10.4650	10.7776
7	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	1.6942	1.2342	4.8873	5.7497	10.4650	10.7776
8	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	1.9708	0.9576	4.8873	5.7497	10.4650	10.7776
9	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	2.2925	0.6359	4.8873	5.7497	10.4650	10.7776
10	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	2.6667	0.2617	4.8873	5.7497	10.4650	10.7776
11	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
12	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
13	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
14	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
15	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
16	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
17	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
18	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
19	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
20	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
21	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
22	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
23	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
24	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
25	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
26	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
27	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
28	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
29	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
Average																	
1-10	4.2913			0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	1.4814	1.4470	4.8873	5.7497	10.4650	10.7776
11-30	4.2913			0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.0000	0.0000	1.9589	2.3046	7.0199	7.2295
1-30	4.2913			0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.4938	0.4823	2.9350	3.4530	8.1683	8.4122
Levelized																	
1-30	4.2913	0.2200	0.0900	0.0684	0.0456	4.7153	0.1435	0.1435	0.2276	0.1021	1.3421	0.8591	1.0497	3.8676	4.5502	9.2655	9.5422

Levelized Tariff = 9.2655 Rs./kWh 9.5422 US Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	659.341	MWs	US$/PKR Parity		97.10	
Net Capacity	606.593	MWs	Equity	25%	19,679.12	PKR Million
KIBOR	11.91%		Debt	75%	810.67	US$ Million
Spread over KIBOR	3.50%		Debt in Pak Rupees		78,716.49	PKR Million
Total Interest Rate	15.41%					

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	78716.49	857.61	3032.55	77858.88	3890.16			
2	77858.88	890.65	2999.51	76968.23	3890.16			
3	76968.23	924.96	2965.20	76043.27	3890.16			
4	76043.27	960.60	2929.57	75082.68	3890.16	0.6839	2.2445	2.9284
1st Year		**3633.81**	**11926.83**		**15560.65**			
5	75082.68	997.60	2892.56	74085.07	3890.16			
6	74085.07	1036.03	2854.13	73049.04	3890.16			
7	73049.04	1075.95	2814.21	71973.09	3890.16			
8	71973.09	1117.40	2772.76	70855.69	3890.16	0.7955	2.1329	2.9284
2nd Year		**4226.98**	**11333.67**		**15560.65**			
9	70855.69	1160.45	2729.72	69695.25	3890.16			
10	69695.25	1205.15	2685.01	68490.09	3890.16			
11	68490.09	1251.58	2638.58	67238.51	3890.16			
12	67238.51	1299.80	2590.36	65938.71	3890.16	0.9253	2.0030	2.9284
3rd Year		**4916.98**	**10643.67**		**15560.65**			
13	65938.71	1349.87	2540.29	64588.84	3890.16			
14	64588.84	1401.88	2488.29	63186.96	3890.16			
15	63186.96	1455.88	2434.28	61731.08	3890.16			
16	61731.08	1511.97	2378.19	60219.11	3890.16	1.0764	1.8520	2.9284
4th Year		**5719.61**	**9841.04**		**15560.65**			
17	60219.11	1570.22	2319.94	58648.89	3890.16			
18	58648.89	1630.71	2259.45	57018.17	3890.16			
19	57018.17	1693.54	2196.63	55324.64	3890.16			
20	55324.64	1758.78	2131.38	53565.86	3890.16	1.2521	1.6763	2.9284
5th Year		**6653.25**	**8907.40**		**15560.65**			
21	53565.86	1826.54	2063.62	51739.32	3890.16			
22	51739.32	1896.90	1993.26	49842.41	3890.16			
23	49842.41	1969.98	1920.18	47872.43	3890.16			
24	47872.43	2045.88	1844.29	45826.55	3890.16	1.4565	1.4719	2.9284
6th Year		**7739.30**	**7821.35**		**15560.65**			
25	45826.55	2124.69	1765.47	43701.86	3890.16			
26	43701.86	2206.55	1683.61	41495.31	3890.16			
27	41495.31	2291.56	1598.61	39203.76	3890.16			
28	39203.76	2379.84	1510.32	36823.92	3890.16	1.6942	1.2342	2.9284
7th Year		**9002.63**	**6558.01**		**15560.65**			
29	36823.92	2471.52	1418.64	34352.40	3890.16			
30	34352.40	2566.74	1323.43	31785.66	3890.16			
31	31785.66	2665.62	1224.54	29120.04	3890.16			
32	29120.04	2768.31	1121.85	26351.73	3890.16	1.9708	0.9576	2.9284
8th Year		**10472.19**	**5088.46**		**15560.65**			
33	26351.73	2874.96	1015.20	23476.77	3890.16			
34	23476.77	2985.72	904.44	20491.05	3890.16			
35	20491.05	3100.74	789.42	17390.31	3890.16			
36	17390.31	3220.20	669.96	14170.11	3890.16	2.2925	0.6359	2.9284
9th Year		**12181.63**	**3379.02**		**15560.65**			
37	14170.11	3344.26	545.90	10825.85	3890.16			
38	10825.85	3473.10	417.07	7352.75	3890.16			
39	7352.75	3606.90	283.26	3745.85	3890.16			
40	3745.85	3745.85	144.31	0.00	3890.16	2.6667	0.2617	2.9284
10th Year		**14170.11**	**1390.54**		**15560.65**			

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	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.9681	0.5861	3.2428	3.8150	8.4231	8.6746
2	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.0169	0.5373	3.2428	3.8150	8.4231	8.6746
3	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.0682	0.4861	3.2428	3.8150	8.4231	8.6746
4	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.1220	0.4322	3.2428	3.8150	8.4231	8.6746
★5	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.1786	0.3756	3.2428	3.8150	8.4231	8.6746
6	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.2381	0.3162	3.2428	3.8150	8.4231	8.6746
7	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.3005	0.2537	3.2428	3.8150	8.4231	8.6746
8	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.3661	0.1882	3.2428	3.8150	8.4231	8.6746
9	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.4350	0.1193	3.2428	3.8150	8.4231	8.6746
10	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.5073	0.0469	3.2428	3.8150	8.4231	8.6746
11	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
12	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
13	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
14	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
15	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
16	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
17	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
18	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
19	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
20	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
21	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
22	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
23	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
24	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
25	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
26	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
27	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
28	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
29	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
30	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
Average																	
1-10	4.1840			0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	1.2201	0.3342	3.2428	3.8150	8.4231	8.6746
11-30	4.1840			0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.0000	0.0000	1.6885	1.9865	6.5945	6.7915
1-30	4.1840			0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.4067	0.1114	2.2066	2.5960	7.2040	7.4192
Levelized																	
1-30	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.1055	0.7653	0.2478	2.7016	3.1784	7.7864	8.0189

Levelized Tariff = 7.7864 Rs./kWh 8.0189 US Cents/kWh

Annex-7A

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	1098.90	MWs	US$/PKR Parity		97.10	
Net Capacity	1010.99	MWs	Equity	75%	36,017.50	PKR Million
LIBOR	0.45%		Debt	25%	1,112.80	US$ Million
Spread over LIBOR	4.50%		Debt in Pak Rupees		108,052.50	PKR Million
Total Interest Rate	4.95%					

Period	Principal	Principal	Interest	Balaance	Debt	Principal	Interest	Debt
1	1,112.80	21.67	13.77	1,091.13	35.44			
2	1,091.13	21.94	13.50	1,069.19	35.44			
3	1,069.19	22.21	13.23	1,046.98	35.44			
4	1,046.98	22.48	12.96	1,024.50	35.44	0.9681	0.5861	1.5542
1st Year		88.30	53.46		141.76			
5	1,024.50	22.76	12.68	1,001.74	35.44			
6	1,001.74	23.04	12.40	978.70	35.44			
7	978.70	23.33	12.11	955.37	35.44			
8	955.37	23.62	11.82	931.75	35.44	1.0169	0.5373	1.5542
2nd Year		92.75	49.01		141.76			
9	931.75	23.91	11.53	907.84	35.44			
10	907.84	24.20	11.23	883.64	35.44			
11	883.64	24.50	10.94	859.13	35.44			
12	859.13	24.81	10.63	834.32	35.44	1.0682	0.4861	1.5542
3rd Year		97.43	44.33		141.76			
13	834.32	25.11	10.32	809.21	35.44			
14	809.21	25.43	10.01	783.78	35.44			
15	783.78	25.74	9.70	758.04	35.44			
16	758.04	26.06	9.38	731.99	35.44	1.1220	0.4322	1.5542
4th Year		102.34	39.42		141.76			
17	731.99	26.38	9.06	705.61	35.44			
18	705.61	26.71	8.73	678.90	35.44			
19	678.90	27.04	8.40	651.86	35.44			
20	651.86	27.37	8.07	624.49	35.44	1.1786	0.3756	1.5542
5th Year		107.50	34.26		141.76			
21	624.49	27.71	7.73	596.78	35.44			
22	596.78	28.05	7.39	568.72	35.44			
23	568.72	28.40	7.04	540.32	35.44			
24	540.32	28.75	6.69	511.57	35.44	1.2381	0.3162	1.5542
6th Year		112.92	28.84		141.76			
25	511.57	29.11	6.33	482.46	35.44			
26	482.46	29.47	5.97	452.99	35.44			
27	452.99	29.83	5.61	423.16	35.44			
28	423.16	30.20	5.24	392.95	35.44	1.3005	0.2537	1.5542
7th Year		118.61	23.14		141.76			
29	392.95	30.58	4.86	362.38	35.44			
30	362.38	30.96	4.48	331.42	35.44			
31	331.42	31.34	4.10	300.08	35.44			
32	300.08	31.73	3.71	268.36	35.44	1.3661	0.1882	1.5542
8th Year		124.60	17.16		141.76			
33	268.36	32.12	3.32	236.24	35.44			
34	236.24	32.52	2.92	203.72	35.44			
35	203.72	32.92	2.52	170.80	35.44			
36	170.80	33.33	2.11	137.48	35.44	1.4350	0.1193	1.5542
9th Year		130.88	10.88		141.76			
37	137.48	33.74	1.70	103.74	35.44			
38	103.74	34.16	1.28	69.58	35.44			
39	69.58	34.58	0.86	35.01	35.44			
40	35.01	35.01	0.43	(0.00)	35.44	1.5073	0.0469	1.5542
10th Year		137.48	4.28		141.76			

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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Upfront Tariff for Imported Coal based Power Projects for upto 1099 MW on Local Financing

Annex - 8

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	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.6368	2.0900	4.5597	5.3643	9.9723	10.2702
2	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.7407	1.9860	4.5597	5.3643	9.9723	10.2702
3	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.8616	1.8651	4.5597	5.3643	9.9723	10.2702
4	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	1.0023	1.7245	4.5597	5.3643	9.9723	10.2702
5	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	1.1659	1.5609	4.5597	5.3643	9.9723	10.2702
6	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	1.3562	1.3706	4.5597	5.3643	9.9723	10.2702
7	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	1.5776	1.1492	4.5597	5.3643	9.9723	10.2702
8	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	1.8351	0.8917	4.5597	5.3643	9.9723	10.2702
9	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	2.1346	0.5921	4.5597	5.3643	9.9723	10.2702
10	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	2.4831	0.2437	4.5597	5.3643	9.9723	10.2702
11	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
12	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
13	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
14	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
15	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
16	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
17	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
18	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
19	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
20	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
21	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
22	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
23	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
24	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
25	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
26	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
27	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
28	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
29	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
30	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
Average																	
1-10	4.1840			0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	1.3794	1.3474	4.5597	5.3643	9.9723	10.2702
11-30	4.1840			0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.0000	0.0000	1.8329	2.1563	6.7644	6.9664
1-30	4.1840			0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.4598	0.4491	2.7418	3.2257	7.8337	8.0677
Levelized																	
1-30	4.1840	0.2200	0.0900	0.0684	0.0456	4.6080	0.1330	0.1330	0.2220	0.0951	1.2498	0.7999	0.9774	3.6102	4.2473	**8.8554**	**9.1198**

Levelized Tariff = 8.8554 Rs./kWh 9.1198 US Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	1098.901	MWs	US$/PKR Parity		97.10		
Net Capacity	1010.989	MWs	Equity	25%	30,540.43	PKR Million	
KIBOR	11.91%		Debt	75%	1,258.10	US$ Million	
Spread over KIBOR	3.50%		Debt in Pak Rupees		122,161.74	PKR Million	
Total Interest Rate	15.41%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	122161.74	1330.94	4706.28	120830.80	6037.22			
2	120830.80	1382.22	4655.01	119448.58	6037.22			
3	119448.58	1435.47	4601.76	118013.11	6037.22			
4	118013.11	1490.77	4546.46	116522.35	6037.22	0.6368	2.0900	2.7268
1st Year		**5639.39**	**18509.50**		**24148.89**			
5	116522.35	1548.20	4489.02	114974.15	6037.22			
6	114974.15	1607.84	4429.38	113366.30	6037.22			
7	113366.30	1669.79	4367.44	111696.52	6037.22			
8	111696.52	1734.11	4303.11	109962.40	6037.22	0.7407	1.9860	2.7268
2nd Year		**6559.94**	**17588.95**		**24148.89**			
9	109962.40	1800.92	4236.30	108161.48	6037.22			
10	108161.48	1870.30	4166.92	106291.18	6037.22			
11	106291.18	1942.35	4094.87	104348.83	6037.22			
12	104348.83	2017.18	4020.04	102331.64	6037.22	0.8616	1.8651	2.7268
3rd Year		**7630.76**	**16518.13**		**24148.89**			
13	102331.64	2094.90	3942.33	100236.75	6037.22			
14	100236.75	2175.60	3861.62	98061.15	6037.22			
15	98061.15	2259.42	3777.81	95801.73	6037.22			
16	95801.73	2346.46	3690.76	93455.27	6037.22	1.0023	1.7245	2.7268
4th Year		**8876.37**	**15272.51**		**24148.89**			
17	93455.27	2436.86	3600.36	91018.41	6037.22			
18	91018.41	2530.74	3506.48	88487.67	6037.22			
19	88487.67	2628.23	3408.99	85859.44	6037.22			
20	85859.44	2729.49	3307.73	83129.95	6037.22	1.1659	1.5609	2.7268
5th Year		**10325.32**	**13823.57**		**24148.89**			
21	83129.95	2834.64	3202.58	80295.31	6037.22			
22	80295.31	2943.85	3093.38	77351.47	6037.22			
23	77351.47	3057.26	2979.97	74294.21	6037.22			
24	74294.21	3175.04	2862.18	71119.17	6037.22	1.3562	1.3706	2.7268
6th Year		**12010.78**	**12138.11**		**24148.89**			
25	71119.17	3297.36	2739.87	67821.81	6037.22			
26	67821.81	3424.39	2612.84	64397.43	6037.22			
27	64397.43	3556.31	2480.91	60841.12	6037.22			
28	60841.12	3693.32	2343.90	57147.80	6037.22	1.5776	1.1492	2.7268
7th Year		**13971.37**	**10177.52**		**24148.89**			
29	57147.80	3835.60	2201.62	53312.19	6037.22			
30	53312.19	3983.37	2053.85	49328.82	6037.22			
31	49328.82	4136.83	1900.39	45191.99	6037.22			
32	45191.99	4296.20	1741.02	40895.79	6037.22	1.8351	0.8917	2.7268
8th Year		**16252.00**	**7896.89**		**24148.89**			
33	40895.79	4461.71	1575.51	36434.08	6037.22			
34	36434.08	4633.60	1403.62	31800.48	6037.22			
35	31800.48	4812.11	1225.11	26988.37	6037.22			
36	26988.37	4997.50	1039.73	21990.88	6037.22	2.1346	0.5921	2.7268
9th Year		**18904.92**	**5243.97**		**24148.89**			
37	21990.88	5190.02	847.20	16800.85	6037.22			
38	16800.85	5389.97	647.25	11410.88	6037.22			
39	11410.88	5597.62	439.60	5813.27	6037.22			
40	5813.27	5813.27	223.96	0.00	6037.22	2.4831	0.2437	2.7268
10th Year		**21990.88**	**2158.01**		**24148.89**			

Uniform Tariff for Local Coal based Power Projects for upto 220 MW on Foreign Financing

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)									Total Tariff Rs./kWh	Total Tariff Cents/kWh
	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	Capacity Charge@ 85%		
1	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.0932	0.6619	3.4999	4.1176	8.7333	8.9941
2	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.1483	0.6068	3.4999	4.1176	8.7333	8.9941
3	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.2062	0.5489	3.4999	4.1176	8.7333	8.9941
4	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.2670	0.4880	3.4999	4.1176	8.7333	8.9941
5	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.3309	0.4241	3.4999	4.1176	8.7333	8.9941
6	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.3980	0.3570	3.4999	4.1176	8.7333	8.9941
7	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.4685	0.2865	3.4999	4.1176	8.7333	8.9941
8	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.5426	0.2125	3.4999	4.1176	8.7333	8.9941
9	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.6204	0.1347	3.4999	4.1176	8.7333	8.9941
10	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.7021	0.0530	3.4999	4.1176	8.7333	8.9941
11	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
12	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
13	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
14	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
15	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
16	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
17	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
18	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
19	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
20	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
21	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
22	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
23	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
24	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
25	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
26	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
27	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
28	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
29	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
30	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
Average																	
1-10	4.1917			0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	1.3777	0.3773	3.4999	4.1176	8.7333	8.9941
11-30	4.1917			0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	-	-	1.7449	2.0528	6.6685	6.8677
1-30	4.1917			0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	0.4592	0.1258	2.3299	2.7410	7.3568	7.5765
Levelized																	
1-30	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.2171	0.8642	0.2798	2.8888	3.3986	**8.0143**	**8.2537**

Levelized Tariff = 8.0143 Rs./kWh 8.2537 Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	219.78	MWs	US$/PKR Parity		97.10	
Net Capacity	200.00	MWs	Equity	75%	8,045.83	PKR Million
LIBOR	0.45%		Debt	25%	248.58	US$ Million
Spread over LIBOR	4.50%		Debt in Pak Rupees		24,137.49	PKR Million
Total Interest Rate	4.95%					

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	248.58	4.84	3.08	243.74	7.92			
2	243.74	4.90	3.02	238.84	7.92			
3	238.84	4.96	2.96	233.88	7.92			
4	233.88	5.02	2.89	228.86	7.92	1.0932	0.6619	1.7550
1st Year		19.72	11.94		31.67			
5	228.86	5.08	2.83	223.77	7.92			
6	223.77	5.15	2.77	218.63	7.92			
7	218.63	5.21	2.71	213.42	7.92			
8	213.42	5.28	2.64	208.14	7.92	1.1483	0.6068	1.7550
2nd Year		20.72	10.95		31.67			
9	208.14	5.34	2.58	202.80	7.92			
10	202.80	5.41	2.51	197.39	7.92			
11	197.39	5.47	2.44	191.92	7.92			
12	191.92	5.54	2.37	186.38	7.92	1.2062	0.5489	1.7550
3rd Year		21.76	9.90		31.67			
13	186.38	5.61	2.31	180.77	7.92			
14	180.77	5.68	2.24	175.09	7.92			
15	175.09	5.75	2.17	169.34	7.92			
16	169.34	5.82	2.10	163.52	7.92	1.2670	0.4880	1.7550
4th Year		22.86	8.81		31.67			
17	163.52	5.89	2.02	157.62	7.92			
18	157.62	5.97	1.95	151.66	7.92			
19	151.66	6.04	1.88	145.62	7.92			
20	145.62	6.11	1.80	139.50	7.92	1.3309	0.4241	1.7550
5th Year		24.01	7.65		31.67			
21	139.50	6.19	1.73	133.31	7.92			
22	133.31	6.27	1.65	127.04	7.92			
23	127.04	6.34	1.57	120.70	7.92			
24	120.70	6.42	1.49	114.28	7.92	1.3980	0.3570	1.7550
6th Year		25.22	6.44		31.67			
25	114.28	6.50	1.41	107.77	7.92			
26	107.77	6.58	1.33	101.19	7.92			
27	101.19	6.66	1.25	94.53	7.92			
28	94.53	6.75	1.17	87.78	7.92	1.4685	0.2865	1.7550
7th Year		26.50	5.17		31.67			
29	87.78	6.83	1.09	80.95	7.92			
30	80.95	6.91	1.00	74.03	7.92			
31	74.03	7.00	0.92	67.03	7.92			
32	67.03	7.09	0.83	59.95	7.92	1.5426	0.2125	1.7550
8th Year		27.83	3.83		31.67			
33	59.95	7.17	0.74	52.77	7.92			
34	52.77	7.26	0.65	45.51	7.92			
35	45.51	7.35	0.56	38.16	7.92			
36	38.16	7.44	0.47	30.71	7.92	1.6204	0.1347	1.7550
9th Year		29.24	2.43		31.67			
37	30.71	7.54	0.38	23.17	7.92			
38	23.17	7.63	0.29	15.54	7.92			
39	15.54	7.72	0.19	7.82	7.92			
40	7.82	7.82	0.10	(0.00)	7.92	1.7021	0.0530	1.7550
10th Year		30.71	0.96		31.67			

Uniform Tariff for Local Coal based Power Projects for upto 220 MW on Local Financing

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	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.6850	2.2483	4.7719	5.6140	10.2297	10.5352
2	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.7968	2.1364	4.7719	5.6140	10.2297	10.5352
3	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.9269	2.0064	4.7719	5.6140	10.2297	10.5352
4	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	1.0782	1.8551	4.7719	5.6140	10.2297	10.5352
5	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	1.2542	1.6791	4.7719	5.6140	10.2297	10.5352
6	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	1.4589	1.4744	4.7719	5.6140	10.2297	10.5352
7	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	1.6970	1.2362	4.7719	5.6140	10.2297	10.5352
8	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	1.9741	0.9592	4.7719	5.6140	10.2297	10.5352
9	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	2.2963	0.6370	4.7719	5.6140	10.2297	10.5352
10	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	2.6711	0.2621	4.7719	5.6140	10.2297	10.5352
11	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
12	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
13	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
14	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
15	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
16	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
17	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
18	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
19	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
20	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
21	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
22	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
23	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
24	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
25	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
26	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
27	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
28	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
29	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
30	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
Average																	
1-10	4.1917			0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	1.4838	1.4494	4.7719	5.6140	10.2297	10.5352
11-30	4.1917			0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.0000	0.0000	1.8386	2.1631	6.7788	6.9813
1-30	4.1917			0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.4946	0.4831	2.8164	3.3134	7.9291	8.1659
Levelized																	
1-30	4.1917	0.2200	0.0900	0.0684	0.0456	4.6157	0.1535	0.1535	0.1112	0.1096	1.3108	0.8605	1.0514	3.7506	4.4124	**9.0281**	**9.2978**

Levelized Tariff = 9.0281 Rs./kWh 9.2978 US Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	219.780	MWs	US$/PKR Parity		97.10		
Net Capacity	200.000	MWs	Equity	25%	6,499.23	PKR Million	
KIBOR	11.91%		Debt	75%	267.73	US$ Million	
Spread over KIBOR	3.50%		Debt in Pak Rupees		25,996.94	PKR Million	
Total Interest Rate	15.41%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	25996.94	283.23	1001.53	25713.70	1284.77			
2	25713.70	294.15	990.62	25419.56	1284.77			
3	25419.56	305.48	979.29	25114.08	1284.77			
4	25114.08	317.25	967.52	24796.83	1284.77	0.6850	2.2483	2.9333
1st Year		1,200.10	3938.96		5139.07			
5	24796.83	329.47	955.30	24467.36	1284.77			
6	24467.36	342.16	942.61	24125.20	1284.77			
7	24125.20	355.34	929.42	23769.86	1284.77			
8	23769.86	369.03	915.73	23400.83	1284.77	0.7968	2.1364	2.9333
2nd Year		1,396.00	3743.06		5139.07			
9	23400.83	383.25	901.52	23017.58	1284.77			
10	23017.58	398.01	886.75	22619.56	1284.77			
11	22619.56	413.35	871.42	22206.22	1284.77			
12	22206.22	429.27	855.49	21776.94	1284.77	0.9269	2.0064	2.9333
3rd Year		1,623.88	3515.18		5139.07			
13	21776.94	445.81	838.96	21331.13	1284.77			
14	21331.13	462.98	821.78	20868.15	1284.77			
15	20868.15	480.82	803.95	20387.33	1284.77			
16	20387.33	499.34	785.42	19887.98	1284.77	1.0782	1.8551	2.9333
4th Year		1,888.96	3250.11		5139.07			
17	19887.98	518.58	766.18	19369.40	1284.77			
18	19369.40	538.56	746.21	18830.84	1284.77			
19	18830.84	559.31	725.46	18271.53	1284.77			
20	18271.53	580.86	703.91	17690.68	1284.77	1.2542	1.6791	2.9333
5th Year		2,197.31	2941.76		5139.07			
21	17690.68	603.23	681.53	17087.45	1284.77			
22	17087.45	626.47	658.29	16460.97	1284.77			
23	16460.97	650.61	634.16	15810.37	1284.77			
24	15810.37	675.67	609.09	15134.69	1284.77	1.4589	1.4744	2.9333
6th Year		2,555.98	2583.08		5139.07			
25	15134.69	701.70	583.06	14432.99	1284.77			
26	14432.99	728.74	556.03	13704.26	1284.77			
27	13704.26	756.81	527.96	12947.45	1284.77			
28	12947.45	785.97	498.80	12161.48	1284.77	1.6970	1.2362	2.9333
7th Year		2,973.21	2165.85		5139.07			
29	12161.48	816.25	468.52	11345.24	1284.77			
30	11345.24	847.69	437.08	10497.54	1284.77			
31	10497.54	880.35	404.42	9617.20	1284.77			
32	9617.20	914.26	370.50	8702.93	1284.77	1.9741	0.9592	2.9333
8th Year		3,458.55	1680.52		5139.07			
33	8702.93	949.49	335.28	7753.45	1284.77			
34	7753.45	986.06	298.70	6767.38	1284.77			
35	6767.38	1,024.05	260.71	5743.33	1284.77			
36	5743.33	1,063.50	221.26	4679.82	1284.77	2.2963	0.6370	2.9333
9th Year		4,023.11	1115.96		5139.07			
37	4679.82	1,104.48	180.29	3575.35	1284.77			
38	3575.35	1,147.03	137.74	2428.32	1284.77			
39	2428.32	1,191.22	93.55	1237.11	1284.77			
40	1237.11	1,237.11	47.66	0.00	1284.77	2.6711	0.2621	2.9333
10th Year		4,679.82	459.24		5139.07			

Upfront Tariff for Local Coal based Power Projects for upto 350 MW on Foreign Financing

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	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.1490	0.6957	3.6517	4.2961	8.6968	8.9566
2	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.2070	0.6378	3.6517	4.2961	8.6968	8.9566
3	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.2678	0.5769	3.6517	4.2961	8.6968	8.9566
4	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.3318	0.5130	3.6517	4.2961	8.6968	8.9566
5	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.3989	0.4458	3.6517	4.2961	8.6968	8.9566
6	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.4694	0.3753	3.6517	4.2961	8.6968	8.9566
7	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.5435	0.3012	3.6517	4.2961	8.6968	8.9566
8	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.6214	0.2233	3.6517	4.2961	8.6968	8.9566
9	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.7031	0.1416	3.6517	4.2961	8.6968	8.9566
10	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.7890	0.0557	3.6517	4.2961	8.6968	8.9566
11	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
12	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
13	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
14	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
15	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
16	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
17	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
18	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
19	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
20	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
21	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
22	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
23	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
24	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
25	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
26	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
27	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
28	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
29	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
Average																	
1-10	3.9768			0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	1.4481	0.3966	3.6517	4.2961	8.6968	8.9566
11-30	3.9768			0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.0000	0.0000	1.8070	2.1258	6.5266	6.7215
1-30	3.9768			0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.4827	0.1322	2.4219	2.8492	7.2500	7.4665
Levelized																	
1-30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.2792	0.9083	0.2941	3.0094	3.5404	**7.9412**	**8.1784**

Levelized Tariff = 7.9412 Rs./kWh 8.1784 Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	350.00	MWs	US$/PKR Parity		97.10	
Net Capacity	318.50	MWs	Equity	25%	13,467.61	PKR Million
LIBOR	0.45%		Debt	75%	416.10	US$ Million
Spread over LIBOR	4.50%		Debt in Pak Rupees		40,402.83	PKR Million
Total Interest Rate	4.95%					

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	416.10	8.10	5.15	407.99	13.25			
2	407.99	8.20	5.05	399.79	13.25			
3	399.79	8.30	4.95	391.49	13.25			
4	391.49	8.41	4.84	383.08	13.25	1.1490	0.6957	1.8447
1st Year		33.02	19.99		53.01			
5	383.08	8.51	4.74	374.57	13.25			
6	374.57	8.62	4.64	365.95	13.25			
7	365.95	8.72	4.53	357.23	13.25			
8	357.23	8.83	4.42	348.40	13.25	1.2070	0.6378	1.8447
2nd Year		34.68	18.33		53.01			
9	348.40	8.94	4.31	339.46	13.25			
10	339.46	9.05	4.20	330.41	13.25			
11	330.41	9.16	4.09	321.25	13.25			
12	321.25	9.28	3.98	311.97	13.25	1.2678	0.5769	1.8447
3rd Year		36.43	16.58		53.01			
13	311.97	9.39	3.86	302.58	13.25			
14	302.58	9.51	3.74	293.07	13.25			
15	293.07	9.62	3.63	283.45	13.25			
16	283.45	9.74	3.51	273.70	13.25	1.3318	0.5130	1.8447
4th Year		38.27	14.74		53.01			
17	273.70	9.86	3.39	263.84	13.25			
18	263.84	9.99	3.27	253.85	13.25			
19	253.85	10.11	3.14	243.74	13.25			
20	243.74	10.24	3.02	233.51	13.25	1.3989	0.4458	1.8447
5th Year		40.20	12.81		53.01			
21	233.51	10.36	2.89	223.15	13.25			
22	223.15	10.49	2.76	212.66	13.25			
23	212.66	10.62	2.63	202.04	13.25			
24	202.04	10.75	2.50	191.28	13.25	1.4694	0.3753	1.8447
6th Year		42.22	10.78		53.01			
25	191.28	10.88	2.37	180.40	13.25			
26	180.40	11.02	2.23	169.38	13.25			
27	169.38	11.16	2.10	158.23	13.25			
28	158.23	11.29	1.96	146.93	13.25	1.5435	0.3012	1.8447
7th Year		44.35	8.65		53.01			
29	146.93	11.43	1.82	135.50	13.25			
30	135.50	11.57	1.68	123.92	13.25			
31	123.92	11.72	1.53	112.21	13.25			
32	112.21	11.86	1.39	100 34	13.25	1.6214	0.2233	1.8447
8th Year		46.59	6.42		53.01			
33	100.34	12.01	1.24	88.33	13.25			
34	88.33	12.16	1.09	76.18	13.25			
35	76.18	12.31	0.94	63.87	13.25			
36	63.87	12.46	0.79	51.41	13.25	1.7031	0.1416	1.8447
9th Year		48.94	4.07		53.01			
37	51.41	12.62	0.64	38.79	13.25			
38	38.79	12.77	0.48	26.02	13.25			
39	26.02	12.93	0.32	13.09	13.25			
40	13.09	13.09	0.16	0.00	13.25	1.7890	0.0557	1.8447
10th Year		51.41	1.60		53.01			

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff for Local Coal based Power Projects for upto 350 MW on Local Financing

Annex - 12

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	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.7200	2.3632	4.9887	5.8691	10.2699	10.5766
2	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.8375	2.2457	4.9887	5.8691	10.2699	10.5766
3	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.9743	2.1090	4.9887	5.8691	10.2699	10.5766
4	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	1.1333	1.9499	4.9887	5.8691	10.2699	10.5766
5	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	1.3183	1.7649	4.9887	5.8691	10.2699	10.5766
6	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	1.5335	1.5497	4.9887	5.8691	10.2699	10.5766
7	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	1.7838	1.2994	4.9887	5.8691	10.2699	10.5766
8	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	2.0750	1.0082	4.9887	5.8691	10.2699	10.5766
9	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	2.4137	0.6695	4.9887	5.8691	10.2699	10.5766
10	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	2.8077	0.2755	4.9887	5.8691	10.2699	10.5766
11	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
12	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
13	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
14	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
15	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
16	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
17	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
18	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
19	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
20	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
21	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
22	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
23	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
24	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
25	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
26	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
27	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
28	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
29	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
Average																	
1-10	3.9768			0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	1.5597	1.5235	4.9887	5.8691	10.2699	10.5766
11-30	3.9768			0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.0000	0.0000	1.9055	2.2418	6.6426	6.8410
1-30	3.9768			0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.5199	0.5078	2.9333	3.4509	7.8517	8.0862
Levelized																	
1-30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1535	0.1535	0.1055	0.1152	1.3778	0.9045	1.1052	3.9152	4.6061	**9.0069**	**9.2759**

Levelized Tariff = 9.0069 Rs./kWh 9.2759 Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	350.00	MWs	US$/PKR Parity		97.10		
Net Capacity	318.50	MWs	Equity	25%	14,505.51	PKR Million	
KIBOR	11.91%		Debt	75%	448.16	US$ Million	
Spread over KIBOR	3.50%		Debt in Pak Rupees		43,516.53	PKR Million	
Total Interest Rate	15.41%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	448.16	4.88	17.27	443.28	22.15			
2	443.28	5.07	17.08	438.21	22.15			
3	438.21	5.27	16.88	432.94	22.15			
4	432.94	5.47	16.68	427.47	22.15	0.7200	2.3632	3.0832
1st Year		20.69	67.90		88.59			
5	427.47	5.68	16.47	421.79	22.15			
6	421.79	5.90	16.25	415.90	22.15			
7	415.90	6.13	16.02	409.77	22.15			
8	409.77	6.36	15.79	403.41	22.15	0.8375	2.2457	3.0832
2nd Year		24.07	64.53		88.59			
9	403.41	6.61	15.54	396.80	22.15			
10	396.80	6.86	15.29	389.94	22.15			
11	389.94	7.13	15.02	382.81	22.15			
12	382.81	7.40	14.75	375.41	22.15	0.9743	2.1090	3.0832
3rd Year		27.99	60.60		88.59			
13	375.41	7.69	14.46	367.73	22.15			
14	367.73	7.98	14.17	359.75	22.15			
15	359.75	8.29	13.86	351.46	22.15			
16	351.46	8.61	13.54	342.85	22.15	1.1333	1.9499	3.0832
4th Year		32.56	56.03		88.59			
17	342.85	8.94	13.21	333.91	22.15			
18	333.91	9.28	12.86	324.63	22.15			
19	324.63	9.64	12.51	314.98	22.15			
20	314.98	10.01	12.13	304.97	22.15	1.3183	1.7649	3.0832
5th Year		37.88	50.71		88.59			
21	304.97	10.40	11.75	294.57	22.15			
22	294.57	10.80	11.35	283.77	22.15			
23	283.77	11.22	10.93	272.56	22.15			
24	272.56	11.65	10.50	260.91	22.15	1.5335	1.5497	3.0832
6th Year		44.06	44.53		88.59			
25	260.91	12.10	10.05	248.81	22.15			
26	248.81	12.56	9.59	236.25	22.15			
27	236.25	13.05	9.10	223.20	22.15			
28	223.20	13.55	8.60	209.65	22.15	1.7838	1.2994	3.0832
7th Year		51.26	37.34		88.59			
29	209.65	14.07	8.08	195.58	22.15			
30	195.58	14.61	7.53	180.97	22.15			
31	180.97	15.18	6.97	165.79	22.15			
32	165.79	15.76	6.39	150.03	22.15	2.0750	1.0082	3.0832
8th Year		59.62	28.97		88.59			
33	150.03	16.37	5.78	133.66	22.15			
34	133.66	17.00	5.15	116.66	22.15			
35	116.66	17.65	4.49	99.01	22.15			
36	99.01	18.33	3.81	80.68	22.15	2.4137	0.6695	3.0832
9th Year		69.35	19.24		88.59			
37	80.68	19.04	3.11	61.64	22.15			
38	61.64	19.77	2.37	41.86	22.15			
39	41.86	20.54	1.61	21.33	22.15			
40	21.33	21.33	0.82	0.00	22.15	2.8077	0.2755	3.0832
10th Year		80.68	7.92		88.59			

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff for Local Coal based Power Projects for upto 660 MW on Foreign Financing

Annex - 13

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	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.0397	0.6295	3.4529	4.0622	8.4630	8.7157
2	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.0921	0.5771	3.4529	4.0622	8.4630	8.7157
3	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.1472	0.5220	3.4529	4.0622	8.4630	8.7157
4	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.2050	0.4641	3.4529	4.0622	8.4630	8.7157
★ 5	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.2658	0.4034	3.4529	4.0622	8.4630	8.7157
6	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.3296	0.3396	3.4529	4.0622	8.4630	8.7157
7	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.3966	0.2725	3.4529	4.0622	8.4630	8.7157
8	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.4671	0.2021	3.4529	4.0622	8.4630	8.7157
9	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.5410	0.1281	3.4529	4.0622	8.4630	8.7157
10	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.6188	0.0504	3.4529	4.0622	8.4630	8.7157
11	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
12	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
13	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
14	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
15	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
16	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
17	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
18	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
19	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
20	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
21	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
22	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
23	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
24	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
25	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
26	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
27	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
28	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
29	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
Average																	
1-10	3.9768			0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	1.3103	0.3589	3.4529	4.0622	8.4630	8.7157
11-30	3.9768			0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.0000	0.0000	1.7837	2.0985	6.4993	6.6934
1-30	3.9768			0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.4368	0.1196	2.3401	2.7531	7.1539	7.3675
Levelized																	
1-30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.2891	0.8219	0.2661	2.8717	3.3785	**7.7793**	**8.0116**

Levelized Tariff = 7.7793 Rs./kWh 8.0116 US Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

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	8.53	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	1.4671	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			

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff for Local Coal based Power Projects for upto 660 MW on Local Financing

Annex - 14

	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)											
Year	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	Capacity Charge@ 85%	Total Tariff Rs./kWh	Total Tariff Cents/kWh
1	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.6839	2.2445	4.8805	5.7417	10.1425	10.4454
2	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.7955	2.1329	4.8805	5.7417	10.1425	10.4454
3	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.9253	2.0030	4.8805	5.7417	10.1425	10.4454
4	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	1.0764	1.8520	4.8805	5.7417	10.1425	10.4454
5	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	1.2521	1.6763	4.8805	5.7417	10.1425	10.4454
6	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	1.4565	1.4719	4.8805	5.7417	10.1425	10.4454
7	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	1.6942	1.2342	4.8805	5.7417	10.1425	10.4454
8	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	1.9708	0.9576	4.8805	5.7417	10.1425	10.4454
9	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	2.2925	0.6359	4.8805	5.7417	10.1425	10.4454
10	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	2.6667	0.2617	4.8805	5.7417	10.1425	10.4454
11	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
12	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
13	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
14	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
15	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
16	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
17	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
18	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
19	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
20	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
21	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
22	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
23	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
24	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
25	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
26	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
27	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
28	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
29	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
Average																	
1-10	3.9768			0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	1.4814	1.4470	4.8805	5.7417	10.1425	10.4454
11-30	3.9768			0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.0000	0.0000	1.9521	2.2966	6.6973	6.8974
1-30	3.9768			0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.4938	0.4823	2.9282	3.4449	7.8457	8.0800
Levelized																	
1-30	3.9768	0.2200	0.0900	0.0684	0.0456	4.4008	0.1435	0.1435	0.1055	0.1021	1.4575	0.8591	1.0497	3.8608	4.5421	8.9429	9.2100

Levelized Tariff = 8.9429 Rs./kWh 9.2100 US Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	659.341	MWs	US$/PKR Parity		97.10	
Net Capacity	606.593	MWs	Equity	25%	19,679.12	PKR Million
KIBOR	11.91%		Debt	75%	810.67	US$ Million
Spread over KIBOR	3.50%		Debt in Pak Rupees		78,716.49	PKR Million
Total Interest Rate	15.41%					

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	78716.49	857.61	3032.55	77858.88	3890.16			
2	77858.88	890.65	2999.51	76968.23	3890.16			
3	76968.23	924.96	2965.20	76043.27	3890.16			
4	76043.27	960.60	2929.57	75082.68	3890.16	0.6839	2.2445	2.9284
1st Year		**3633.81**	**11926.83**		**15560.65**			
5	75082.68	997.60	2892.56	74085.07	3890.16			
6	74085.07	1036.03	2854.13	73049.04	3890.16			
7	73049.04	1075.95	2814.21	71973.09	3890.16			
8	71973.09	1117.40	2772.76	70855.69	3890.16	0.7955	2.1329	2.9284
2nd Year		**4226.98**	**11333.67**		**15560.65**			
9	70855.69	1160.45	2729.72	69695.25	3890.16			
10	69695.25	1205.15	2685.01	68490.09	3890.16			
11	68490.09	1251.58	2638.58	67238.51	3890.16			
12	67238.51	1299.80	2590.36	65938.71	3890.16	0.9253	2.0030	2.9284
3rd Year		**4916.98**	**10643.67**		**15560.65**			
13	65938.71	1349.87	2540.29	64588.84	3890.16			
14	64588.84	1401.88	2488.29	63186.96	3890.16			
15	63186.96	1455.88	2434.28	61731.08	3890.16			
16	61731.08	1511.97	2378.19	60219.11	3890.16	1.0764	1.8520	2.9284
4th Year		**5719.61**	**9841.04**		**15560.65**			
17	60219.11	1570.22	2319.94	58648.89	3890.16			
18	58648.89	1630.71	2259.45	57018.17	3890.16			
19	57018.17	1693.54	2196.63	55324.64	3890.16			
20	55324.64	1758.78	2131.38	53565.86	3890.16	1.2521	1.6763	2.9284
5th Year		**6653.25**	**8907.40**		**15560.65**			
21	53565.86	1826.54	2063.62	51739.32	3890.16			
22	51739.32	1896.90	1993.26	49842.41	3890.16			
23	49842.41	1969.98	1920.18	47872.43	3890.16			
24	47872.43	2045.88	1844.29	45826.55	3890.16	1.4565	1.4719	2.9284
6th Year		**7739.30**	**7821.35**		**15560.65**			
25	45826.55	2124.69	1765.47	43701.86	3890.16			
26	43701.86	2206.55	1683.61	41495.31	3890.16			
27	41495.31	2291.56	1598.61	39203.76	3890.16			
28	39203.76	2379.84	1510.32	36823.92	3890.16	1.6942	1.2342	2.9284
7th Year		**9002.63**	**6558.01**		**15560.65**			
29	36823.92	2471.52	1418.64	34352.40	3890.16			
30	34352.40	2566.74	1323.43	31785.66	3890.16			
31	31785.66	2665.62	1224.54	29120.04	3890.16			
32	29120.04	2768.31	1121.85	26351.73	3890.16	1.9708	0.9576	2.9284
8th Year		**10472.19**	**5088.46**		**15560.65**			
33	26351.73	2874.96	1015.20	23476.77	3890.16			
34	23476.77	2985.72	904.44	20491.05	3890.16			
35	20491.05	3100.74	789.42	17390.31	3890.16			
36	17390.31	3220.20	669.96	14170.11	3890.16	2.2925	0.6359	2.9284
9th Year		**12181.63**	**3379.02**		**15560.65**			
37	14170.11	3344.26	545.90	10825.85	3890.16			
38	10825.85	3473.10	417.07	7352.75	3890.16			
39	7352.75	3606.90	283.26	3745.85	3890.16			
40	3745.85	3745.85	144.31	0.00	3890.16	2.6667	0.2617	2.9284
10th Year		**14170.11**	**1390.54**		**15560.65**			

Upfront Tariff for Local Coal based Power Projects for upto 1099 MW on Foreign Financing

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	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.9681	0.5861	3.2186	3.7865	8.0879	8.3294
2	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.0169	0.5373	3.2186	3.7865	8.0879	8.3294
3	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.0682	0.4861	3.2186	3.7865	8.0879	8.3294
4	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.1220	0.4322	3.2186	3.7865	8.0879	8.3294
5	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.1786	0.3756	3.2186	3.7865	8.0879	8.3294
6	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.2381	0.3162	3.2186	3.7865	8.0879	8.3294
7	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.3005	0.2537	3.2186	3.7865	8.0879	8.3294
8	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.3661	0.1882	3.2186	3.7865	8.0879	8.3294
9	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.4350	0.1193	3.2186	3.7865	8.0879	8.3294
10	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.5073	0.0469	3.2186	3.7865	8.0879	8.3294
11	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
12	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
13	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
14	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
15	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
16	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
17	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
18	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
19	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
20	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
21	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
22	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
23	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
24	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
25	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
26	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
27	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
28	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
29	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
30	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
Average																	
1-10	3.8773			0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	1.2201	0.3342	3.2186	3.7865	8.0879	8.3294
11-30	3.8773			0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.0000	0.0000	1.6643	1.9580	6.2594	6.4463
1-30	3.8773			0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.4067	0.1114	2.1824	2.5675	6.8689	7.0740
Levelized																	
1-30	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.2004	0.7653	0.2478	2.6774	3.1499	**7.4512**	**7.6738**

Levelized Tariff = 7.4512 Rs./kWh 7.6738 US Cents/kWh

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	1098.90	MWs	US$/PKR Parity		97.10		
Net Capacity	1010.99	MWs	Equity	75%	36,017.50	PKR Million	
LIBOR	0.45%		Debt	25%	1,112.80	US$ Million	
Spread over LIBOR	4.50%		Debt in Pak Rupees		108,052.50	PKR Million	
Total Interest Rate	4.95%						

Period	Principal	Principal	Interest	Balaance	Debt	Principal	Interest	Debt
1	1,112.80	21.67	13.77	1,091.13	35.44			
2	1,091.13	21.94	13.50	1,069.19	35.44			
3	1,069.19	22.21	13.23	1,046.98	35.44			
4	1,046.98	22.48	12.96	1,024.50	35.44	0.9681	0.5861	1.5542
1st Year		88.30	53.46		141.76			
5	1,024.50	22.76	12.68	1,001.74	35.44			
6	1,001.74	23.04	12.40	978.70	35.44			
7	978.70	23.33	12.11	955.37	35.44			
8	955.37	23.62	11.82	931.75	35.44	1.0169	0.5373	1.5542
2nd Year		92.75	49.01		141.76			
9	931.75	23.91	11.53	907.84	35.44			
10	907.84	24.20	11.23	883.64	35.44			
11	883.64	24.50	10.94	859.13	35.44			
12	859.13	24.81	10.63	834.32	35.44	1.0682	0.4861	1.5542
3rd Year		97.43	44.33		141.76			
13	834.32	25.11	10.32	809.21	35.44			
14	809.21	25.43	10.01	783.78	35.44			
15	783.78	25.74	9.70	758.04	35.44			
16	758.04	26.06	9.38	731.99	35.44	1.1220	0.4322	1.5542
4th Year		102.34	39.42		141.76			
17	731.99	26.38	9.06	705.61	35.44			
18	705.61	26.71	8.73	678.90	35.44			
19	678.90	27.04	8.40	651.86	35.44			
20	651.86	27.37	8.07	624.49	35.44	1.1786	0.3756	1.5542
5th Year		107.50	34.26		141.76			
21	624.49	27.71	7.73	596.78	35.44			
22	596.78	28.05	7.39	568.72	35.44			
23	568.72	28.40	7.04	540.32	35.44			
24	540.32	28.75	6.69	511.57	35.44	1.2381	0.3162	1.5542
6th Year		112.92	28.84		141.76			
25	511.57	29.11	6.33	482.46	35.44			
26	482.46	29.47	5.97	452.99	35.44			
27	452.99	29.83	5.61	423.16	35.44			
28	423.16	30.20	5.24	392.95	35.44	1.3005	0.2537	1.5542
7th Year		118.61	23.14		141.76			
29	392.95	30.58	4.86	362.38	35.44			
30	362.38	30.96	4.48	331.42	35.44			
31	331.42	31.34	4.10	300.08	35.44			
32	300.08	31.73	3.71	268.36	35.44	1.3661	0.1882	1.5542
8th Year		124.60	17.16		141.76			
33	268.36	32.12	3.32	236.24	35.44			
34	236.24	32.52	2.92	203.72	35.44			
35	203.72	32.92	2.52	170.80	35.44			
36	170.80	33.33	2.11	137.48	35.44	1.4350	0.1193	1.5542
9th Year		130.88	10.88		141.76			
37	137.48	33.74	1.70	103.74	35.44			
38	103.74	34.16	1.28	69.58	35.44			
39	69.58	34.58	0.86	35.01	35.44			
40	35.01	35.01	0.43	(0.00)	35.44	1.5073	0.0469	1.5542
10th Year		137.48	4.28		141.76			

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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Uplift Tariff for Local Coal based Power Projects for upto 1099 MW on Local Financing

Annex - 16

Year	Energy Purchase Price (Rs./kWh)						Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 85%	Total Tariff	Total Tariff
	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		Rs./kWh	Cents/kWh
1	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.6368	2.0900	4.5478	5.3504	9.6517	9.9400
2	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.7407	1.9860	4.5478	5.3504	9.6517	9.9400
3	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.8616	1.8651	4.5478	5.3504	9.6517	9.9400
4	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	1.0023	1.7245	4.5478	5.3504	9.6517	9.9400
5	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	1.1659	1.5609	4.5478	5.3504	9.6517	9.9400
6	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	1.3562	1.3706	4.5478	5.3504	9.6517	9.9400
7	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	1.5776	1.1492	4.5478	5.3504	9.6517	9.9400
8	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	1.8351	0.8917	4.5478	5.3504	9.6517	9.9400
9	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	2.1346	0.5921	4.5478	5.3504	9.6517	9.9400
10	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	2.4831	0.2437	4.5478	5.3504	9.6517	9.9400
11	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
12	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
13	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
14	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
15	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
16	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
17	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
18	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
19	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
20	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
21	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
22	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
23	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
24	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
25	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
26	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
27	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
28	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
29	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
30	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
Average																	
1-10	3.8773			0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	1.3794	1.3474	4.5478	5.3504	9.6517	9.9400
11-30	3.8773			0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.0000	0.0000	1.8211	2.1424	6.4438	6.6362
1-30	3.8773			0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.4598	0.4491	2.7300	3.2118	7.5131	7.7375
Levelized																	
1-30	3.8773	0.2200	0.0900	0.0684	0.0456	4.3013	0.1330	0.1330	0.1028	0.0951	1.3571	0.7999	0.9774	3.5984	4.2334	8.5348	8.7897

Levelized Tariff = 8.5348 Rs./kWh 8.7897 US Cents/kWh

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	1098.901	MWs	US$/PKR Parity		97.10		
Net Capacity	1010.989	MWs	Equity	25%	30,540.43	PKR Million	
KIBOR	11.91%		Debt	75%	1,258.10	US$ Million	
Spread over KIBOR	3.50%		Debt in Pak Rupees		122,161.74	PKR Million	
Total Interest Rate	15.41%						

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million PKR	Principal Repayment Rs./kW/hour	Interest Rs./kW/ Hour	Debt Servicing Rs./kW/h
1	122161.74	1330.94	4706.28	120830.80	6037.22			
2	120830.80	1382.22	4655.01	119448.58	6037.22			
3	119448.58	1435.47	4601.76	118013.11	6037.22			
4	118013.11	1490.77	4546.46	116522.35	6037.22	0.6368	2.0900	2.7268
1st Year		**5639.39**	**18509.50**		**24148.89**			
5	116522.35	1548.20	4489.02	114974.15	6037.22			
6	114974.15	1607.84	4429.38	113366.30	6037.22			
7	113366.30	1669.79	4367.44	111696.52	6037.22			
8	111696.52	1734.11	4303.11	109962.40	6037.22	0.7407	1.9860	2.7268
2nd Year		**6559.94**	**17588.95**		**24148.89**			
9	109962.40	1800.92	4236.30	108161.48	6037.22			
10	108161.48	1870.30	4166.92	106291.18	6037.22			
11	106291.18	1942.35	4094.87	104348.83	6037.22			
12	104348.83	2017.18	4020.04	102331.64	6037.22	0.8616	1.8651	2.7268
3rd Year		**7630.76**	**16518.13**		**24148.89**			
13	102331.64	2094.90	3942.33	100236.75	6037.22			
14	100236.75	2175.60	3861.62	98061.15	6037.22			
15	98061.15	2259.42	3777.81	95801.73	6037.22			
16	95801.73	2346.46	3690.76	93455.27	6037.22	1.0023	1.7245	2.7268
4th Year		**8876.37**	**15272.51**		**24148.89**			
17	93455.27	2436.86	3600.36	91018.41	6037.22			
18	91018.41	2530.74	3506.48	88487.67	6037.22			
19	88487.67	2628.23	3408.99	85859.44	6037.22			
20	85859.44	2729.49	3307.73	83129.95	6037.22	1.1659	1.5609	2.7268
5th Year		**10325.32**	**13823.57**		**24148.89**			
21	83129.95	2834.64	3202.58	80295.31	6037.22			
22	80295.31	2943.85	3093.38	77351.47	6037.22			
23	77351.47	3057.26	2979.97	74294.21	6037.22			
24	74294.21	3175.04	2862.18	71119.17	6037.22	1.3562	1.3706	2.7268
6th Year		**12010.78**	**12138.11**		**24148.89**			
25	71119.17	3297.36	2739.87	67821.81	6037.22			
26	67821.81	3424.39	2612.84	64397.43	6037.22			
27	64397.43	3556.31	2480.91	60841.12	6037.22			
28	60841.12	3693.32	2343.90	57147.80	6037.22	1.5776	1.1492	2.7268
7th Year		**13971.37**	**10177.52**		**24148.89**			
29	57147.80	3835.60	2201.62	53312.19	6037.22			
30	53312.19	3983.37	2053.85	49328.82	6037.22			
31	49328.82	4136.83	1900.39	45191.99	6037.22			
32	45191.99	4296.20	1741.02	40895.79	6037.22	1.8351	0.8917	2.7268
8th Year		**16252.00**	**7896.89**		**24148.89**			
33	40895.79	4461.71	1575.51	36434.08	6037.22			
34	36434.08	4633.60	1403.62	31800.48	6037.22			
35	31800.48	4812.11	1225.11	26988.37	6037.22			
36	26988.37	4997.50	1039.73	21990.88	6037.22	2.1346	0.5921	2.7268
9th Year		**18904.92**	**5243.97**		**24148.89**			
37	21990.88	5190.02	847.20	16800.85	6037.22			
38	16800.85	5389.97	647.25	11410.88	6037.22			
39	11410.88	5597.62	439.60	5813.27	6037.22			
40	5813.27	5813.27	223.96	0.00	6037.22	2.4831	0.2437	2.7268
10th Year		**21990.88**	**2158.01**		**24148.89**			

SUMMARY OF UPFRONT COAL TARIFF

Levelized Tariff	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Cents/kWh	Cents/kWh	Cents/kWh	Cents/kWh
220 MW	8.6417	9.6774	8.2537	9.2978
350 MW	8.5353	9.6240	8.1784	9.2759
660 MW	8.3601	9.5422	8.0116	9.2100
1099 MW	8.0189	9.1198	7.6738	8.7897

1st 10 Years Tariff	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Cents/kWh	Cents/kWh	Cents/kWh	Cents/kWh
220 MW	9.3821	10.9148	8.9941	10.5352
350 MW	9.3135	10.9247	8.9566	10.5766
660 MW	9.0642	10.7776	8.7157	10.4454
1099 MW	8.6746	10.2702	8.3294	9.9400

11-30 Years Tariff	Imported Coal		Local Coal	
	F. Financing	L. Financing	F. Financing	L. Financing
	Cents/kWh	Cents/kWh	Cents/kWh	Cents/kWh
220 MW	7.2557	7.3609	6.8677	6.9813
350 MW	7.0784	7.1890	6.7215	6.8410
660 MW	7.0419	7.2295	6.6934	6.8974
1099 MW	6.7915	6.9664	6.4463	6.6362

Assumptions:

Gross Capacity	220 MW	350 MW	660 MW	1,099 MW
Net Capacity	200 MW	322 MW	607 MW	1,011 MW
Auxiliary	9.0%	9.0%	8.0%	8.0%
Efficiency Local Coal	37.0%	39.0%	39.0%	40.0%
Efficiency Imported Coal	37.0%	39.0%	39.0%	40.0%
Calorific Value:				
Imported Coal LHV (Btu/kg.)	25,555.98	25,555.98	25,555.98	25,555.98
Local Coal LHV (Btu/kg.)	22,046.00	22,046.00	22,046.00	22,046.00
Price:				
Imported Coal (US$/M. Ton)	129.06	129.06	129.06	129.06
Local Coal (US$/M. Ton)	103.17	103.17	103.17	103.17
Proj. Cost F. Fin. (US$ Million/MW)	1.51	1.59	1.45	1.35
Proj. Cost L. Fin. (US$ Million/MW)	1.62	1.71	1.64	1.53
Exchange Rate (Rs./$)	97.10	97.10	97.10	97.10
Debt Equity Ratio:				
Debt	75%	75%	75%	75%
Equity	25%	25%	25%	25%
Kibor/Libor	11.91%/0.45%	11.91%/0.45%	11.91%/0.45%	11.91%/0.45%
Premium Kibor/Libor	3.5%/4.5%	3.5%/4.5%	3.5%/4.5%	3.5%/4.5%
ROE Imported Coal	24.5%	24.5%	27.2%	27.2%
ROE Local Coal	26.5%	26.5%	29.5%	29.5%
Project Drawdown:				
1st Year of Construction Period	40%	40%	40%	40%
2nd Year of Construction Period	30%	30%	30%	30%
3rd Year of Construction Period	20%	20%	15%	15%
4th Year of Construction Period	10%	10%	15%	15%
Debt Drawdown:				
1st Year of Construction Period	33%	33%	33%	33%
2nd Year of Construction Period	33%	33%	33%	33%
3rd Year of Construction Period	20%	20%	13%	13%
4th Year of Construction Period	13%	13%	20%	20%
Equity Drawdown:				
1st Year of Construction Period	60%	60%	60%	60%
2nd Year of Construction Period	20%	20%	20%	20%
3rd Year of Construction Period	20%	20%	20%	20%

Annex-D

Whistleblower Pakistan

72-F/II Jami Commercial Street No. 9
Phase VII, DEFENCE HOUSING
AUTHORITY, KARACHI
PHONE: 0092-21-35391778
FAX: 0092-21-35391778
EMAIL: info@whistleblower.com.pk
WEBSITE:www.whistleblower.com.pk

01st December 2014

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

SUBJECT: TARIFF PETITION FILED BY LALPIR POWER LIMITED FOR COAL CONVERSION: INTERVENTION REQUEST BY SYED ADIL GILANI.

1. It is the statutory duty of the Authority to decide all cases judiciously and to protect the interest of all parties, specially the consumers, who do not have any effective representation (at least in Pakistan, mainly due to time and resource constraints). The responsibility of the Authority to protect the consumers' interest is far greater because the Investors invariably carry out the feasibility studies of their projects through leading national/international consultants at costs reimbursable by the consumers through tariff. The consumers have no such facility. In the circumstances, the Authority should either by itself or by appointing a consultant, ensure that its Decisions do not adversely affect the national exchequer and the consumers.

2. It is submitted that the Tariff Petition can neither be entertained nor processed unless the Licensee first seeks and gets the approval of the Authority for a Licencee Proposed Modification (LPM) in its Generation Licence. In case the Authority has approved the LPM, kindly provide a copy of the Decision. The Intervenor may have missed the proceedings conducted by the Authority for approving an LPM because it is not possible to entertain a Tariff Petition without an LPM.

3. The Intervenor challenges and controverts the information given in points i) to ix) of the Notice of Admission and requests that Issues be framed on all these points.

4. It is further submitted that the Tariff Petition filed by Lalpir Power Limited can not be processed further unless the following documents/information are obtained from Lalpir Power and communicated to the Intervenor:

- feasibility study that fuel conversion of their old Plant is more feasible as compared to the installation/commissioning of a new Power Plant;
- details of month-wise Generation of Lalpir Power during the last five years;
- details of loss to be borne by consumers of DISCOs if Lalpir Power is allowed to burn coal in-efficiently in its old Power Plant of low efficiency (35.6% LHV at full load);
- details of remaining life of its Power Plant;
- provision of details of costs to be incurred in the proposed conversion viz-a-viz induction of new Power Plant;
- provision of a study to show whether the investment of Lalpir Power in the proposed conversion of an in-efficient Plant is more feasible than commissioning of a new Power Plant keeping in view the fact that such conversion is not adding any capacity in the system;
- carrying out of a study to determine that there is no issue of availability of Generation capacity in the country and the only issue is affordability. If the answer is 'yes', then why high cost Wind, Solar and RFO Generation is being approved/considered by the Regulator;
- provision of a detailed study of the Coal Supply/Purchase Agreement including coal handling and coal transportation arrangements and costs for the proposed Power Plant;
- obtaining details regarding the efforts made to ensure non-volatility of coal prices required by the Plant during the entire remaining term of its useful life/operation;
- obtaining details as to whether EPA Punjab has given permission for the operation of this Plant on coal;
- obtaining details with regard to ash disposal and any recurring costs during the operation of the Plant;
- depending on the precise location, how does Lalpir Power intend to get the coal to its Power Plant? and
- the transportation costs, whether by rail or road, which are not clearly reflected.

5. The Authority is requested to provide the Intervenor a copy of the Policy or decision of the Government of Pakistan for the conversion of RFO based Power Plants to coal. The consumers are deeply concerned as to whether or not such conversion would be allowed across the Board for all RFO based Power Plants. In case all RFO based Power Plants apply for conversion, what would happen to energy security based on multi-source generation?

6. It is requested that a Public Hearing be held to consider the important Issues arising in the matter. Moreover, a meaningful hearing is only possible after detailed Issues are framed and communicated to the stakeholders along with documents/information

provided by the Applicant, and that too well before the Public Hearing, which is being requested through this Intervention.

7. The Authority must ensure that there is no physical progress prior to the grant of LPM in the Generation License of Lalpir Power, if it is found to be warranted. The Authority must ensure that the Plant remains operational and should not be got modified until and unless it is allowed by the Authority after observing all Rules and Regulations.

8. The critical question as to which Power Plants qualify for conversion is a Policy matter which must be considered and a decision taken prior to granting any approval, which may become a precedent and a liability from which it may not be possible for the Authority to make a departure.

9. It is requested that a copy of the Decision of the Authority admitting the Tariff Petition of Lalpir Power be provided to the Intervenor.

10. In the facts and circumstances narrated above and the concern of the Regulator regarding conversion viz-a-viz new induction, it is requested that Issues be framed and conveyed and a Public Hearing be held thereafter in Multan. This may graciously be done after allowing sufficient time to file responses to enable the Authority to come to a just and informed decision. It appears that on the present record the Authority is not in a position to do so.

11. The Intervenor undertakes to pay all charges due.

Yours sincerely

Syed Adil Gilani
Chairman
Intervenor

Encl: Bank Draft for Rs.270/- being the Intervention Fee. Pay Order # 1556027

Annex-E

TRANSPARENCY INTERNATIONAL-PAKISTAN

5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII,
Defence Housing Authority, Karachi.
Tel: (92-21)-35390408, 35390409, Fax: 35390410
E-mail: ti.pakistan@gmail.com
Website: www.transparency.org.pk

16th February, 2016

TL16/1602/5A

Brig. (retd.) Tariq Saddozai,
Chairman,
National Electric Power Regulatory Authority (NEPRA),
Islamabad.

2nd Reminder

Sub: Complaint against Collusion of NEPRA and Port Qasim Electric Power Company (Private) Limited (PQEPCPL) in Determining of Tariff for 2x660 MW Coal Power Plant, Sponsored by Mr. Saifur Rahaman.

Over Charging of Tariff in 30 Years Caused Extra Payment to PQEPCPL of Rs. 51.7 Billion at 100% Efficiency.

Dear Sir,

Transparency International Pakistan refers to its letter dated 12th September, 2015 and a Reminder has also been sent to you dated 4th February, 2016, on a complaint which comprises of the allegation of collusion between NEPRA and Port Qasim Electric Power Company (Private) Limited (PQEPCPL) in determining of Tariff for 2x660 MW Coal Power Plant. However, no reply has been received till date, causing loss of Rs. 51.7 Billion to public.

Chairman, NEPRA is again requested to take immediate action to inquire into above allegations, and if the allegations are found correct, action under NAO 1999 should be taken against all those officers of NEPRA who are responsible for this collusive practice, and all the sponsors who have conspired to obtain false tariff from NEPRA.

Transparency International Pakistan is striving for across the board application of Rule of Law, which is the only way to stop corruption.

With Regards,

Sohail Muzaffar
Chairman

Copies forwarded for the information with request to take action under their mandate to:

1. Secretary to Prime Minister, Islamabad.
2. Chairman, NAB, Islamabad.
3. Chairman, Prime Minister's Inspection Commission, Islamabad.
4. Registrar, Supreme Court of Pakistan, Islamabad.
5. Managing Director, PPRA, Islamabad.

ANNEX-F

TRANSPARENCY INTERNATIONAL-PAKISTAN

5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII,
Defence Housing Authority, Karachi.
Tel: (92-21)-35390408, 35390409, Fax: 35390410
E-mail: ti.pakistan@gmail.com
Website: www.transparency.org.pk

24th May 2016

TL16/2405/11A

Mr. Chaudhry Qamar Zaman
Chairman
National Accountability Bureau,
Islamabad.

Sub: Allegation of Illegal Grant of Revision of about 32% to 37% in Tariff of Solar Power Plants by Collusion of NEPRA and Few Officers of Govt. of Pakistan M/s Blue Star Hydel Pvt. Ltd.; M/s Buksh Solar Pvt. Ltd. and M/s Safe Solar Pvt. Ltd, Giving Additional Benefit of over Rs 100 Billion at Cost of General Public.

Dear Sir,

Transparency International Pakistan has received a complaint on the Allegation Illegal Grant of Revision of about 32% to 37% in Tariff of Solar Power Plants by Collusion of NEPRA and Few Officers of Govt. of Pakistan M/s Blue Star Hydel Pvt. Ltd.; M/s Buksh Solar Pvt. Ltd. and M/s Safe Solar Pvt. Ltd, Giving Additional Benefit of over Rs 100 Billion at Cost of General Public.

The complainant has made following serious allegation; that,

1. National Electric Power Regulatory Authority (NEPRA) has illegally approved power purchases from three private renewable energy firms at rates that are at least 32 per cent higher than the upfront tariff announced only three months ago in December 2015.
2. NEPRA earlier had announced its revised upfront tariff for solar power plants on December 16, 2015, to reflect the declining prices of solar technology in the international market, on the Cabinet Committee on Energy federal government's request.
3. NEPRA in December set a revised tariff for 1-20 MW Solar Plant ranging between 10.89 cents per kilowatt hour (kWh) for South Region and 11.53 cents kWh for North Region in December 2015, effectively superseding the previous rate — 16-17 cents per kWh. In the National Assembly, NA (32nd Session) on Thursday 19th May 2016, replying to Star Question No 208, Khawaja Asif, Minister of Water and Power, confirmed the above revised tariff.
4. This tariff will also expire on June 30, 2016, and new tariff which will be much lower than 10 cent will be announced thereafter.
5. But against any legal authority, under pressure from higher ups, BOI and PM House, NEPRA in collusion with the three companies M/s Blue Star Hydel Pvt. Ltd.; M/s Buksh Solar Pvt. Ltd. and M/s Safe Solar Pvt. Ltd approved the tariffs for solar plants at 14.4 to 15.8 cents per kWh, and instructed the government to notify these revised rates in the official gazette.
6. The Ministry is reported to have decided to take up the matter at the highest level since it involves hundreds of billions of rupees over the 25 to 30-year lives of these renewable projects, which will come out of consumers' pockets through their monthly electricity bills.

7. A 10 paisa per unit difference over one megawatt involved an extra burden on public of Rs1.2 billion over 25 years, and NEPRA has approved extra burden on public for the benefit of three companies, that could exceed Rs100 bn.

8. In Safe Power case, in February 2016 while the plea of Power Plant was approved by NEPRA to be changed from Bahawalpur to Multan, following objection was raised by Mr. Anwar Kamal of Anwar Kamal Law Associates (AKLA),

> *AKLA opposed allowing modification to SSPPL on the basis that solar power plants have low plant factor and higher tariff. AKLA stated that these plants are non-base load and their technology is undeveloped. AKLA submitted that as they do not meet the Economic Merit Order therefore, cannot be declared as must run Power Plants. AKLA objected allowing these Power Plants to execute long term Energy Purchase Agreements on Take or Pay basis. AKLA requested that NEPRA should disallow the commissioning of these Power Plants. AKLA added that after being declared as Must Run Plants with Take or Pay contracts, these Plants are supplying costlier electricity to NTDC while at the same time cheaper electricity plants are not being operated. AKLA highlighted that cheaper plants which are not being operated to their full capacity, are getting Capacity Payments as well. AKLA urged the Authority that not only the LPM filed by SSPPL be rejected but the Generation Licence and tariff granted to Generation Facilities/SPPs/SFs be cancelled;*

NEPRA rejected brushed aside all the valid objections of renowned Anwar Kamal Law Associates in following words which shows the mindset of the Regulator,

> ***Regarding the observations of AKLA, the Authority considers that previously similar comments were offered during proceedings for determining Upfront Generation Tariff for Solar PV Power Plants. The Authority through its determination No. NEPRA/UTS-01/905-907, dated January 22, 2015 addressed all the observations/comments of AKLA. Therefore, the Authority does not find any cogent reason to address the comments of AKLA afresh.***

9. During the Cabinet Committee on Energy (CCoE)meetings in which it was agreed on April 8, 2015 that further investments in Solar and Wind power generation will be processed only after the tariffs for both the sources are reduced by NEPRA. The objective behind this decision was to provide the benefit of the falling costs of renewable projects to the power consumers.

10. NEPRA was advised by the MoW & P to initiate the process for new reduced tariffs for Wind and Solar and all further project facilitation was halted by AEDB, in anticipation of the new tariffs. Wind upfront tariff was issued on October 19, 2015. However, upfront solar tariff took a longer time and was issued on December 16, 2015.

11. Between April, 2015 till December, 2015 NEPRA issued varying tariffs, ranging from approximately Rs. 14 to Rs. 17, thereby creating a legal anomaly for the Central Power Purchasing Agency, which is bound to procure electric power at the best effective price available in terms of NEPRA's own Interim Power Procurement Regulations, 2005.

12. The Central Power Purchasing Agency on November 6, 2015 had also written to NEPRA asking whether the levelized upfront tariff in field at the time, (i.e. between Rs. 14.8591to Rs. 15.7793) was the best available tariff. Subsequently, on December 16, 2015, NEPRA determined a revised levelized upfront tariff for solar projects between Rs.11.2 614 to RS. 12.1093, which was even lower than the one in field at the time that CPPA-G had sought clarification.
13. Central Power Purchasing Agency has refused to enter into energy purchase agreements till such time that NEPRA gave clarity in the matter, the sponsors of Solar Power initiated litigation against the Ministry, AEDB, NEPRA, NTDC and CPPA-G before the Islamabad High Court.
14. But all of sudden NEPRA has accepted the upfront tariff adoption by M/s Blue Star Hydel (Pvt.) Limited at a levelized tariff of Rs. 15.7793, M/s Buksh Solar (Pvt.) Limited at a levelized tariff of Rs. 15.1301and M/s Safe Solar Power (Pvt.) Limited at a levelized tariff of Rs. 15.1301.

The complaint has been examined by Transparency International Pakistan, and we are surprised to note that NEPRA has entertained the revision of Tariff of three companies, against the fact that there is a pending petition in Islamabad High Court on same issue of Solar tariff, and also against the decision of CCoE dated April 8, 2015.
NEPRA has also allowed 80% to 100% higher capital cost in Gas Fired Power Plant in 2015. This blatant jacked up cost has been proved wrong , as in the RLNG-based projects which involved engineering, procurement and construction cost (EPC) of $890,000 per megawatt for private sector projects, the Government of Pakistan under the supervision of Mr. Shehbaz Sharif, CM Punjab decided to hold competitive bidding resulting in finalization of EPC contracts on less than $475,000 per MW for projects at Guddu, Bhikki and Havelli Bahadur Shah.

TI Pakistan requests the Chairman NAB to examine the complaint, and take notice of these allegations of corruption of over Rs 100 billion and if the complaint is found correct, all these illegal acts may be reverted back, and action may be taken against all those who are responsible for the mis-use of authority for private gain, under NATO 1999, Section 9.

Transparency International Pakistan is striving for across the board application of Rule of Law, which is the only way to stop corruption.

With Regards,

Sohail Muzaffar
Chairman

Copy forwarded for necessary action as per rules to,

1. Secretary to Prime Minster, Islamabad.
2. Minister of Waters & Power, Islamabad.
3. Chairman, PMIC, Islamabad,
4. Registrar Supreme Court Pakistan, Islamabad.

BUSINESS RECORDER
Editor-in-chief: M.A. Zuberi

Annex G

Wind power: That's another scam brewing up

RECORDER REPORT

ISLAMABAD: Although it is not known whether or not the government is seeking to steer clear of different brewing scams in various economic areas, it is quite clear that it has in fact encouraged a fraudulent scheme in wind power energy sector to swindle the national exchequer. According to sources, the 'Letter of Intent (LoI)' game, which is strongly characterised by conceit, deceit and intrigues, has become a convenient tool to inflict huge financial losses on nation's kitty for the benefit of a few individuals.

Inquiries carried out by Business Recorder in the country and as well as abroad show how a wind power project works: an LoI is given by Government of Pakistan for interested parties to setup a wind project. Once the LoI is arranged, back door deals allow for some of the projects to get government land to the projects at few rupees per acre (cents per acre). Currently over 100 LoI are given whereas some 20-25 projects have been allocated government land. Only a couple of projects have acquired their own land.

"Once the land is available, a technical feasibility is done which involves 5 individual studies and total cost for doing these plus setting up the wind measurement equipment plus legal and Technical consultant comes to half million ($500,000) dollars and this is the total cost for the sponsor," the sources said.

The following is a typical breakdown of a wind project in Pakistan, according to sources:

Construction Contract or EPC (Engineering Procurement and Construction - 'turnkey' project) is a buzzword in energy circles these days.

EPC Contract involves procurement of Energy Equipment (wind turbines), setting it up on Site then commissioning of the project. Individually turbines cost around $47-$50 million, civil costs are around $8-$9 million and another $8 million are for setting up the electrical substation and transmission lines inside the site. These add up to $63-$67 million. EPC contractors charge another few million to cover their risks but the total Final "fully loaded" EPC cost should come to around $75 million.

However, as shown in the Table 1, the projects show their total EPC cost as $105-$111 million. The difference between the actual cost and the submitted cost is typically recouped. Project Company and the EPC contractor have a Contract that is submitted to the regulators and bankers and creditors that shows the amount shown in the Table 1.

However, there is a second contract - a typical side letter arrangement that provides the split of the recoup back to the Project Company and tech contractor, the sources added.

As EPC companies are part of the structure they realize that project company is taking cash out into their pockets, they ask for higher prices to $85-$95 million dollars (depending on the negotiations and allocation of risks) to share in the loot, the sources said and added that all international companies have local partners that help set up the arrangement.

Table 1 - submitted fictitious contract

EPC Cost 111,300,000

Non-EPC Cost 1,855,000

Project Development Cost 3,930,000

Land Cost 103,389

Taxes and Custom Duty 715,700

Insurance During Construction 1,502,550

Financing Costs 3,106,112

IDC 9,602,871

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Total Project Cost 132,115,622

Table 2 - the real contract

EPC Cost 80,000,000

Non-EPC Cost 500,000

Project Development Cost 900,000

Land Cost 100,000

Taxes and Custom Duty 715,000

Insurance During Construction 1,500,000

Financing Costs 3,000,000

IDC 9,000,000

-

-

Total Project Cost 85,715,000

According UAE and foreign-based sources, people in Pakistan are bribing their way, violating US foreign corrupt practices Act often involving bribes to regulators, government officials and bankers. They are not putting any equity in the company, on the contrary taking money out at the time of financing approval ($132-$85 million, which is fifty percent over the total project cost). Another way they hit the projects viability is shorting on the needed spare parts and other risks are left alone to be borne by the lender they also hire their own cronies and relatives at high salaries to show as project development costs. Prospective investors say that this is beginning to ruin the renewable market in Pakistan and the goodwill of the US Government who is trying to help the people of Pakistan is laid waste by the greed and corruption of a few individuals.

An average person in Pakistan thinks that corrupt rich are getting richer while their lives have not seen any change, according to the sources.

ANNEX-B

THE EXPRESS TRIBUNE
WITH THE International Herald Tribune

Graft charges: SC seeks reply from private firms

Published: November 30, 2010

ISLAMABAD: The Supreme Court has asked private power companies to submit their responses by December 6 on allegations of massive corruption in rental power projects levelled by the Transparency International in one of its reports.

A three-member bench of the apex court, headed by Chief Justice Iftikhar Muhammad Chaudhry, was hearing a suo motu case along with the pleas regarding allegations of corruption in contract of rental power projects and the government's decision to increase electricity tariffs.

During the hearing, Khawaja Tariq Rahim, the counsel for Wapda and the now-dissolved Pepco submitted that the electricity produced by rental power projects will cost Rs14 per unit.

The chief justice remarked that consumers would have to pay Rs18 per unit for this electricity.

When Tariq Rahim responded by saying that the government was already providing subsidy on electricity and consumers would get the electricity at "current rates", Justice Ramday said that the burden of subsidy would ultimately fall on the consumers, because it would be given from taxpayers' money.

The court directed Wapda's counsel to submit a reply to the Transparency International report which details instances of huge corruption in rental project contracts.

He, however, sought more time for examining the report and preparing a reply, which the court allowed and adjourned the case till December 6.

The court then directed Rahim to prepare a complete synopsis of the rental power projects and produce it before the court on next hearing, besides providing complete infrastructure of the rental projects.

He was further directed to tell the court that how much money the government had spent on 19 rental power projects. The chief justice asked him that what necessitated the government to buy electricity at such high rates, adding that this burden will ultimately be shifted to general consumers.

Published in The Express Tribune, November 30th, 2010.