



National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/UTCPPC-2017/13339-13341
July 31, 2017

Subject: **Determination of the Authority in the Matter of Upfront Tariff for Captive Power Plants on Coal for Short Term Utilization of the Available Generation Capacity**

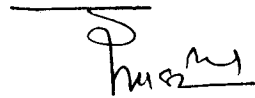
Dear Sir,

Please find enclosed herewith the subject Determination of the Authority (09 pages).

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

3. The Order of the Authority is to be notified in the official Gazette.

Enclosure: As above


31 07 17
(Syed Safer Hussain)

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

CC:

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



**DETERMINATION OF THE AUTHORITY IN THE MATTER OF UPFRONT TARIFF
FOR CAPTIVE POWER PLANTS ON COAL FOR SHORT TERM UTILIZATION OF
THE AVAILABLE GENERATION CAPACITY**

1.0 INITIATION OF PROCEEDINGS

- 1.1 The Authority in exercise of its powers under Section 7 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with Rule 3(1) of the NEPRA Tariff (Standards and Procedures) Rules 1998 and Regulation 3(1) of NEPRA Upfront Tariff (Approval & Procedure) Regulations, 2011 initiated suo moto proceedings for determination of upfront tariff for short term utilization of the available generation capacity from captive power plants on coal.
- 1.2 A proposal for upfront tariff for captive power plants on coal on take and pay basis was made public in leading national news papers on 29th April 2017. Stakeholders were invited to become party to the proceedings by filing intervention request in the matter. Stakeholders were also invited to file comments in the matter for assistance of the Authority. Individual notices were also sent to all concerned.
- 1.3 The proposed upfront tariff was comprised of fuel cost component and fixed cost component. The fuel cost component was calculated on net LHV thermal efficiency of 31%, net calorific value of 22,861 BTUs/ Kg., reference coal price of US\$ 93.94/ton and exchange rate of Rs. 105/US\$. The fuel cost component was also proposed to be adjusted for variation in delivered coal price and variation in actual calorific value. The following upfront tariff on coal was proposed for captive power plants:

Description	Rs./kWh
Fuel Cost Component	4.7492
Fixed Cost Component	1.3819
Total	6.1311

- 1.4 Hearing in the matter was scheduled on 11th May 2017 at NEPRA Tower, Islamabad. Stakeholders were also invited to participate in the hearing. Following issues were framed for the hearing:

- Whether the thermal efficiency and fuel cost component are reasonable?
- Whether the fixed cost component is reasonable?



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31.07.17

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2. HEARING

2.1 The hearing was held as per schedule and was participated by K-Electric, ICI Paksitan, Gadoon Textile Mills, Sitara Energy Limited, Nishat Power, PPDB, CPPA, NPCC, AQLAAL and BOI.

3.0 FILING OF INTERVENTION REQUESTS

3.1 Following stakeholders filed intervention requests in the matter:

- i) K – Electric
- ii) Pakistan Atomic Energy Commission
- iii) Anwar Kamal Law Associates

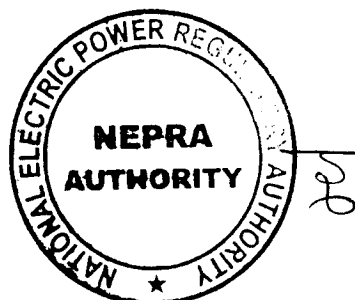
K – Electric

3.2 A summary of the intervention request filed by K – Electric is as under:

- Whether upfront tariff is applicable to existing captive generators or for new captive generators or both?
- For how long will the proposed upfront tariff remain valid?
- Whether the proposed net LHV efficiency of 31% will vary with machine type?
- What will be the length of power acquisition contract?

Pakistan Atomic Energy Commission (PAEC)

- PAEC submitted that the CV of 22,861 Btu/Kg of imported coal is on higher side than that of local coal. CFPP is based on local coal which has different price and CV.
- PAEC also submitted that auxiliary consumption has not been covered and requested the Authority to cover it in the fuel cost component.
- PAEC further submitted that fuel losses have not been incorporated and that calculation is based on LHV and requested the Authority to cover the same in fuel cost component.
- PAEC submitted that thermal efficiency of low CV coal is normally less than high CV coal and requested the Authority to calculate thermal efficiency on low CV coal while considering local coal.
- PAEC requested that local coal price/ CV may also be considered in calculation of tariff.





- PAEC with regards to the fixed cost component submitted that the proposed fixed cost component is on the lower side and requested the Authority to provide a breakup of the same.
- PAEC submitted that O&M component of local coal based plant shall be on the higher side compared to imported coal and requested the Authority to consider debt servicing and capacity charges as CFPP is a brand new plant.

Anwar Kamal Law Associates

- ✓ • The available generation capacity of several base load plants has not been utilized to its full.
- Due to non-utilization of the available generation capacity and the nature of long-term PPA/EPA, the consumers are paying for the capacity which power is not being provided.
- ✓ • The cost per unit of power purchase from several power plants in many months may be in the range of above Rs. 100/kWh.
- ✓ • The criteria of determining economic merit order and mechanism to observe it has not been provided in the case of CPPs.
- By referring short term utilization, the intervener asked if this is a step to open the market, then why is this initiative for the short term?
- Coal is a natural resource, using it at proposed efficiency of 31% is quite low.
- The intervener appreciated the proposed tariff on 'take and pay' basis, however, is of the view that CPPs will offset the capacity under 'take or pay' basis and will result in payment for idle capacity.
- The intervener also asked about the prospective power purchaser, whether sale purchase shall be under bilateral agreements between CPPs and DISCOs, the role of CPPA and measures taken to prevent the bitter experience of the past CPP regime.

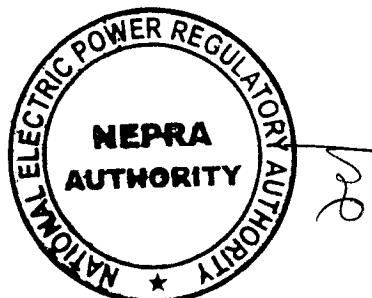
4.0 FILING OF COMMENTS

4.1 Following stakeholders filed comments in the matter:

- i) HESCO
- ii) ICI Pakistan

HESCO

4.2 HESCO appreciated and supported the Authority's proceedings in the matter and submitted that the efficiency for coal power plant should be fixed at 38%.

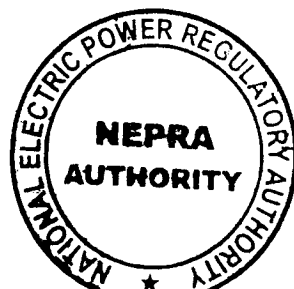


ICI Pakistan

- ICI submitted that the proposed delivered coal price does not include inland freight required for Punjab and the corresponding coal transportation losses. ICI submitted a breakup of the same at US\$ 129.62/ton.
- ICI submitted that the existing captive power plants are small sized and low-pressure boiler technology based, therefore, the Authority should consider a net thermal efficiency of 24.5% at par with bagasse based cogeneration projects.
- ICI further submitted that the proposed fixed cost component is not reasonable, particularly when compared with Rs. 1.53/kWh and Rs. 1.4543/kWh for RFO and Gas based CPPs and requested the Authority to revisit the same to eliminate any chances of discrimination.

CONSIDERATION OF THE VIEWS OF THE STAKEHOLDERS, ANALYSIS, FINDINGS AND RECOMMENDATIONS ON IMPORTANT ISSUES

5. Whether the thermal efficiency and fuel cost component for Coal are reasonable?
- 5.1 The proposed fuel cost component was based on net LHV thermal efficiency of 31%. PAEC submitted that auxiliary consumption has not been covered and requested the Authority to cover it in the fuel cost component. PAEC further submitted that fuel losses have not been incorporated and that calculation is based on LHV and requested the Authority to cover the same in fuel cost component. PAEC further submitted that thermal efficiency of low CV coal is normally less than high CV coal and requested the Authority to calculate thermal efficiency on low CV coal while considering local coal. PAEC also submitted that the CV of 22,861 Btu/Kg of imported coal is on higher side than that of local coal. The price and CV of local coal needs to be considered while determining the upfront tariff. ICI submitted that the existing captive power plants are small sized and based on low-pressure boiler technology, therefore, the Authority should consider a net thermal efficiency of 24.5% at par with bagasse based cogeneration projects. During the hearing, the representatives of ICI Pakistan submitted that the efficiency of their plant is 27%. HESCO in its comments requested the Authority to fix net thermal efficiency at 38% while in the opinion of Anwar Kamal Law Associates; the proposed efficiency of 31% is quite low.
- 5.2 The Authority has considered the submissions made by the stakeholders regarding net LHV thermal efficiency. During the hearing, the stakeholders were directed to submit evidence in support of their submissions. However, none of the interveners or commentators provided any documentary evidence in support of their claims.
- 5.3 The net LHV thermal efficiency of 31% was proposed after considering all the factors affecting thermal efficiency of the coal based small power plants, keeping in view the





operational information of existing and upcoming captive power plants and considering the regional benchmarks. In the absence of any documentary evidence for changing the proposed thermal efficiency level, the Authority has decided to maintain the net LHV thermal efficiency of 31% for calculation of fuel cost component for CPPs generating electricity on coal for sale of surplus power to the system.

- 5.4 Most of the coal in Pakistan is imported from South Africa. Based on the Argus/McCloskey's Coal Price Index API4 for the 1st week of May 2017, the delivered coal price works out US\$ 117.99/ton including freight of US\$ 22.31/ton and handling losses during transportation from port to the power plant @1%. Accordingly on the basis of net LHV thermal efficiency of 31%, net calorific value of 23,794 BTUs/lb., reference Ex-GST coal price of US\$ 117.99/ton and exchange rate of Rs. 105/US\$, the fuel cost component works out Rs. 5.7310/kWh and the same is being approved. The approved fuel cost component shall be subject to adjustment for variation in the delivered coal price and calorific value from time to time in accordance with the coal price adjustment mechanism approved by the Authority dated 23rd September 2016.
- 5.5 Pakistan Atomic Energy Commission vide its intervention request submitted that it intends to utilize local coal for its power plant. In case of local coal, there is no pricing mechanism. PAEC informed that they have invited bids in the matter for supply of local coal and received 13 bids from prospective local coal suppliers from around the country. They are in the process of evaluation of bids and once the process will be completed, coal supply agreement(s) shall be signed for 1 year. PAEC further submitted that local coal has higher Sulphur content which requires use of limestone.
- 5.6 The Authority considered the submissions of PAEC regarding use of local coal in the proposed power plant. In the absence of local coal pricing mechanism, the determination of price through a transparent competitive bidding process is satisfactory. The power producer shall employ all means to ensure transparency in the bidding process. Since, the local coal is of high sulphur content, limestone needs to be used to neutralize the impact of sulphur. Actual limestone cost shall be treated as pass-through. Limestone shall also be procured through transparent bidding process. For local coal, the fuel cost component shall be subject to adjustment for variation in the coal price and calorific value from time to time in accordance with the following adjustment mechanism:

$$FCC_{(Rev)} = 5.7310 \times P_{(Rev)} / P_{(Ref)} \times CV_{(Ref)} / CV_{(Rev)}$$

Where:

$FCC_{(Rev)}$ = Revised Fuel cost component.

$P_{(Rev)}$ = Revised Ex-GST delivered coal price per ton.





$P_{(Ref)}$ = Reference Ex-GST delivered coal price of Rs. 12,389/ton.

$CV_{(Ref)}$ = Reference net calorific value of 23,794 BTUs/Kg.

$CV_{(Rev)}$ = Revised net calorific value in BTUs/Kg.

- 5.7 In order to have a further check on the price of local coal and to balance the interest of the consumers, the Authority has decided that the combined financial impact of local coal price and cost of limestone shall always be equal to or less than the cost of imported coal price in the respective month. In case the combined financial impact of local coal price and cost of limestone exceeds the cost of imported coal price in any month; the excess shall not be passed on to the consumers and shall be borne by the power producer.
6. **Whether the fixed cost component for each technology is reasonable?**
- 6.1 The fixed cost component of Rs. 1.3819/kWh was proposed for coal based Captive Power Plants. The fixed cost component comprised of fixed and variable O&M, ash disposal, insurance and ROE. PAEC and ICI Pakistan requested higher fixed cost components. During the hearing, the representatives of ICI Pakistan submitted Rs. 3.0/kWh for fixed cost component. Anwar Kamal Law Associates, on the other hand requested a downwards revision in the same. However, none of the interveners or commentators submitted any documentary evidence in support of their claims.
- 6.2 The Authority considered the submissions made by the stakeholders regarding fixed cost components. Keeping in view the cost allowed to other coal based power plant of approximately similar size and in the absence of reliable documentary evidence, the Authority has decided to maintain the proposed fixed cost component and the same is being approved for coal based captive power plants.
- 6.3 The proposed fixed cost component did not include cost of limestone. According to the coal specification report of South African coal, Sulphur content is 0.62% on dry basis. Sulphur content of below 1% is considered within emission standards and requires no limestone for neutralizing. However, if sulphur content exceeds 1%, limestone shall be required for desulphurization. On the basis of coal specs and feedback from the captive power plants, cost of limestone was not included in the proposed upfront tariff and the same is being maintained. In case of local coal, the cost limestone shall be allowed subject to limit defined in last Paragraph of the previous issue.



7. **OTHER ISSUES**

7.1 Regarding the issues raised by Anwar Kamal Law Associates, it would be pertinent to mention that power plants are utilized on the basis of demand and availability and the demand is not constant throughout 24 hours. Similarly if the plant is under outages allowance, it can not be dispatched. If the plant is not available beyond the agreed outages period, no capacity charges shall be paid and LDs shall also be imposed by the power purchaser. The dispatch instructions to CPPs are issued by DISCOs in coordination with NPCC in accordance with the distribution code and grid code. It is worth mentioning here that short term utilization means the utilization of the available generation capacity with CPPs to reduce the current level of load shedding. The proposed efficiency has been worked out on the basis of technical analysis after considering all the factors e.g. size, degradation etc. It is to be noted that DISCOs shall purchase the power offered under the instant upfront tariff from CPPs under bilateral agreements and payment settlement shall be in accordance with the commercial code. In view of the aforesaid, the concerns raised by M/s Anwar Kamal Law Associates stand addressed.

8. **ORDER**

8.1 In exercise of powers under section 7 (3) (a) read with section 31 (4) of the Act, the Authority hereby determines and approves the following upfront tariff for delivery of electricity by captive power plants on coal to the power purchaser on take and pay basis:

Reference Tariff

Description	Rs./kWh
Reference Fuel Cost Component	5.7310
Fixed Cost Component	1.3819
Total Generation Cost of delivered unit	7.1129

Adjustment on account of Fuel Price Variation

8.2 The fuel cost component for imported coal shall be subject to adjustment for variation in the delivered coal price and calorific value from time to time in accordance with the coal price adjustment mechanism approved by the Authority dated 23rd September 2016.

The fuel cost component for local coal shall be subject to adjustment for variation in the delivered coal price and calorific value from time to time in accordance with the following adjustment mechanism:



$$FCC_{(Rev)} = 5.7310 \times P_{(Rev)} / P_{(Ref)} \times CV_{(Ref)} / CV_{(Rev)}$$

Where:

$FCC_{(Rev)}$ = Revised Fuel cost component.

$P_{(Rev)}$ = Revised Ex-GST delivered coal price per ton.

$P_{(Ref)}$ = Reference Ex-GST delivered coal price of Rs. 12,389/ton.

$CV_{(Ref)}$ = Reference net calorific value of 23,794 BTUs/Kg.

$CV_{(Rev)}$ = Revised net calorific value in BTUs/Kg.

- 8.3 In order to have a check on the price of local coal and to balance the interest of the consumers, the Authority has decided that the combined financial impact of local coal price and cost of limestone shall always be equal to or less than the cost of imported coal price in the respective month. In case the combined financial impact of local coal price and cost of limestone exceed the cost of imported coal price in the any month; the excess shall not be passed on to the consumers and shall be borne by the power producer.

TERMS & CONDITIONS

- 8.4 The determined upfront tariff shall be subject to the following terms & conditions:
- i) Any captive power plant/small power producer can opt the upfront tariff for sale of surplus power to the system.
 - ii) Inland freight charges shall be added to the imported coal price for calculation of delivered coal price.
 - iii) Coal handling loss from load port to discharge port of 1% or actual, whichever is minimum, shall be allowed for calculation of imported coal price.
 - iv) Coal handling loss for inland transportation of 1% or actual, whichever is minimum, shall be allowed for calculation of imported/local coal price.
 - v) The upfront tariff shall remain applicable till 31st December 2018.
 - vi) The term of the power purchase agreement under the upfront tariff shall be for calendar years 2017 and 2018.
 - vii) Sale/purchase shall be on take and pay basis.
 - viii) There shall be no indexation in the fixed cost component.
 - ix) The consent of the power purchaser shall be mandatory.







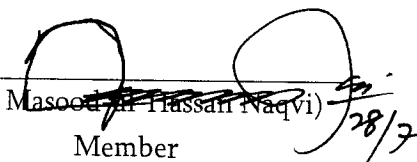
- x) Minimum capacity to be offered under this upfront tariff shall be 3MW.
- xi) The power plants under this tariff shall not be entitled for any capacity charges.
- xii) The EPA / PPA executed shall be consistent with all applicable documents including Generation License and NEPRA's tariff determination for the power producer. Any provision of PPA / EPA which is inconsistent with NEPRA's tariff determination shall be void to that extent and its financial impact shall not be passed on to the end consumers.
- xiii) CPPs selling electricity to DISCOs under this upfront tariff shall not be allowed to purchase electricity ~~simultaneously~~ from DISCOs ^{at the same time} in the same premises. *Yes*
- xiv) The sponsor who is interested in opting Upfront Tariff shall submit unconditional formal application to NEPRA for approval of the Authority.


8.5 The above Order is to be notified in the official gazette in accordance with the provisions of Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act 1997.

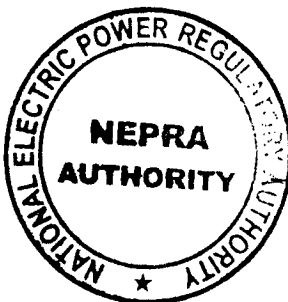
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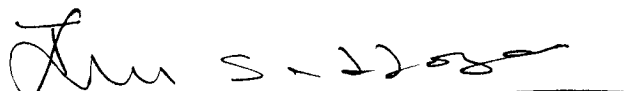

(Himayat Ullah Khan)
Member



(Maj (R) Haroon Rashid)
Member


(Syed Masood Hassan Waqvi)
Member


(Saif Ullah Chattha)
Vice Chairman
28.7.2017




(Brig (R) Tariq Sadozai)
Chairman


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