



Registrar

National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/UTCPPG-2017/13366-13368
July 31, 2017

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

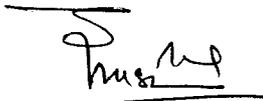
Dear Sir,

Please find enclosed herewith the subject Determination of the Authority (10 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


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(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.



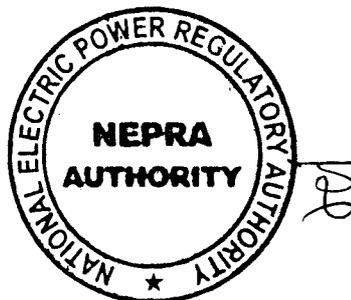
**DETERMINATION OF THE AUTHORITY IN THE MATTER OF UPFRONT TARIFF FOR
CAPTIVE POWER PLANTS ON GAS FOR SHORT TERM UTILIZATION OF THE
AVAILABLE GENERATION CAPACITY**

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 Gas.
- 1.2 A proposal for upfront tariff for captive power plants on Gas on take and pay basis was made public in leading national newspapers 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 37.5%, LHV-HHV factor of 1.1076 and reference Gas price of Rs. 600 per MMBTU. The fuel cost component was also proposed to be adjusted for variation in Gas price. The following upfront tariff on Gas was proposed for captive power plants:

Description	Rs./kWh
Fuel Cost Component	6.0469
Fixed Cost Component	1.4543
Total	7.5012

- 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?
 - In case of Gas based CPPs, whether the use of LNG shall be allowed?



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2.0 HEARING

2.1 The hearing was held as per schedule and was participated by Faisalabad Chamber of Commerce & Industries, Ager Textile, Hi-Tech Pipe & Engineering Industries, K-Electric, Mekotex (Pvt.) Limited, Sitara Energy Limited, Nishat Power, Lotte Chemical, PPDB, CPPA, NPCC, AQLAAL and BOI.

3.0 FILING OF INTERVENTION REQUESTS

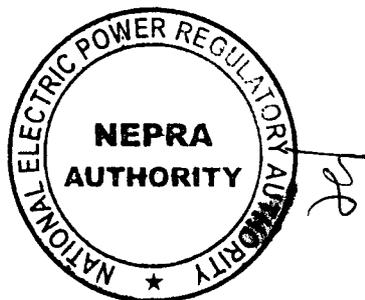
3.1 Following stakeholders filed intervention requests in the matter:

- i. Mekotex (Pvt) Limited
- ii. Agar Textile (Pvt) Limited
- iii. Hi-Tech Pipes & Engineering Industries
- iv. Faisalabad Chamber of Commerce & Industries
- v. K – Electric
- vi. Sitara Energy Limited
- vii. Anwar Kamal Law Associates

Mekotex, Agar Textile & Hi-Tech Pipes & Engineering Industries

3.2 Summary of the intervention requests filed by Mekotex Private Limited, Ager Textile and Hi-Tech Pipes & Engineering Industries is as under:

- LHV thermal efficiency of 37.5% is not achievable with existing plants. A 33% thermal efficiency is practical and achievable.
- Fixed cost component of Rs. 1.4543/kWh is not justified.
- As per the OEM, the O&M cost is in the range of Rs. 2.219/kWh – Rs. 2.28/kWh.
- Requested to allow PEPCO prescribed fixed cost component of Rs. 2.49/kWh after incorporating 4% annual CPI in the base rate of Rs. 1.53/kWh.
- Considering a capital cost of USD 500/kW and a 75:25 debt equity ratio, the return on equity is 0.25 paisa/kWh and the fixed should also include 0.78 paisa/kWh for depreciation.



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Faisalabad Chamber of Commerce & Industries

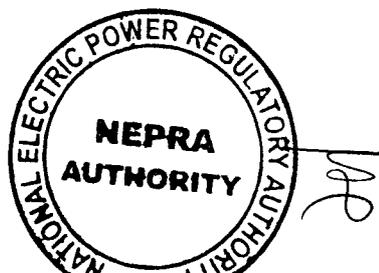
- 3.3 A summary of the intervention request filed by Faisalabad Chamber of Commerce is as under:
- Requested the Authority to connect all possible power generation facilities in the system to ensure 24/7 hour supply to industries, commerce, business houses, commercial markets and general public at large being connected with the business industries and businesses.

K – Electric

- 3.4 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 37.5% will vary with machine type?
 - What will be the length of power acquisition contract?

Sitara Energy

- 3.5 A summary of the intervention request filed by Sitara Energy is as under:
- The proposed upfront tariff does not appear to fully balance the interests of all stakeholders including the power producers and requires upwards revision.
 - The object sought to be achieved by the development of the proposed upfront tariff is to avail all excess energy in order to mitigate the energy crisis. This object will be seriously undermined if SPPs are arbitrarily not allowed to opt for the proposed upfront tariff, and therefore, we request that an express direction may kindly be made in the final tariff determination by the Authority allowing SPPs to opt for the proposed upfront tariff.
 - The FCC is based on unreasonably high efficiency of 37.5% which is not attainable by existing SPPs and CPPs with old and used equipment. It would amount to unfair discrimination and arbitrary treatment if existing SPPs and CPPs with old and used plants were held to the same standard and expected to achieve the same efficiency levels as new CPPs.
 - Requested the Authority to revise the FCC upwards to account for lower levels of efficiency of existing and older power plants.



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- Submitted that the fixed cost component is unreasonably low.
- The Authority must bear in mind that there is no idle capacity and that some capital expenditures would be necessarily required irrespective of the existing infrastructure of CPPs and SPPs. Therefore, the fixed cost component should allow financially viable capital investments required for upgrading and maintaining existing plants of CPPs and SPPs for generating surplus energy.
- Requested that the fixed cost component be revised upwards.

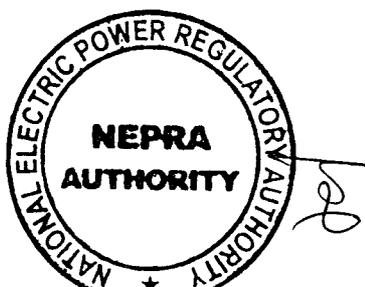
Anwar Kamal Law Associates

3.6 The intervention request filed by Anwar Kamal Law Associates is summarized hereunder:

- 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 for 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?
- Burning pipeline quality gas on such low efficiency of 37.5% especially in the scenario that cheaper gas power plants of 50% efficiency are not being utilized to their full capacity.
- 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:



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- i) HESCO
- ii) Pakistan Textile Exporters Association
- iii) LOTTE Chemicals Pakistan Ltd.

HESCO

- 4.2.1 HESCO submitted that the proposed upfront FCC for gas power plants is equal to the existing component for captive power plants under SPP policy framework, whereas the fixed cost component appears on higher side and needs to be made equal to the existing tariff for captive power plants under SPP policy framework.

Pakistan Textile Exporters Association

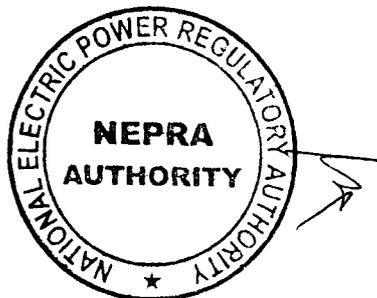
- 4.3 Comments filed by Pakistan Textile Exporters Association (PTEA) are summarized below:

- PTEA submitted that due to scheduled and unscheduled load shedding, export houses and industries are losing export orders and hence suffering losses which may ultimately result in overall unemployment in the country.
- PTEA requested that the Authority ensures provision of uninterrupted supply of electricity by utilizing all available resources, as an emergent measure including captive power plants, small power plants and new captive power plants until the government achieves commissioning of mega projects in pipeline. PTEA believe that upfront tariff must be rational, practical and feasible to attract the surplus capacities available all over Pakistan.

LOTTE Chemicals Pakistan Ltd.

- 4.4 Comments filed by Lotte are summarized hereunder:

- Submitted that it is planning to get into a 5-year agreement with K Electric for sale of surplus electricity, therefore, requested the Authority to clearly define “short term”.
- Requested the Authority to consider OEM recommended efficiency and adjust it with working temperature/ conditions and also allow 2% degradation factor per year.
- Submitted that fixed cost component proposed by the Authority is low and based on experience and actual expenses recommended a minimum fixed cost component of Rs. 2.52/kWh based.
- Requested annual adjustment with inflation on the fixed cost component.
- Submitted that the Authority should also consider the corporate tax structure and other levis e.g., WPPF, WWF etc. (around 40%) incurred by CPPs vs IPPs.



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

Whether the thermal efficiency and fuel cost component for Gas are reasonable?

- 5.1 The proposed fuel cost component was based on net LHV thermal efficiency of 37.5% for CPPs based on Gas. With the exception of Anwar Kamal Law Associate, all of the interveners and commentators submitted that efficiency of 37.5% is not achievable. Anwar Kamal Law Associates were of the view that natural gas is a scarce resource and it should not be allowed to be burnt at this low efficiency. However, Mekotex, Hi-Tech Pipes and Agar Textiles proposed an efficiency level of 33% as being achievable. Sitara Energy also suggested that 37.5% is not achievable while Lotte Chemicals requested the Authority to consider OEM figures after adjusting for site conditions and requested an additional 2% degradation factor per year. However, none of the interveners and commentators provided any documentary evidence supporting their claims with regards to the efficiency.
- 5.2 The Authority has considered the submissions made by stakeholders. The proposed net LHV thermal efficiency of 37.5% is based on existing gas based captive power plants. The referred efficiency was approved after considering all the factors affecting thermal efficiency. The Authority has, therefore, decided to maintain the net LHV thermal efficiency of 37.5% for calculation of fuel cost component for CPPs generating electricity on Gas for sale of surplus power to the system.
- 5.3 Accordingly, on the basis of net LHV thermal efficiency of 37.5%, LHV-HHV factor of 1.1076 and reference Gas price of Rs. 600/ MMBTU, the fuel cost component works out Rs. 6.0469/kWh and the same is being approved. The fuel cost component shall be subject to variation in gas price in accordance with the following adjustment mechanism:

$$FCC_{(Rev)} = FCC_{(Ref)} \times GP_{(Rev)} / GP_{(Ref)}$$

Where:

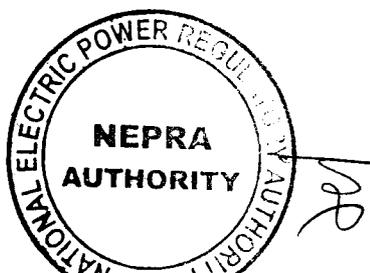
$GCC_{(Rev)}$ = Fuel cost component on gas applicable for the billing cycle

$GP_{(Rev)}$ = Revised gas price, excluding General Sales Tax applicable for the billing cycle as notified by OGRA for new captive power

$GP_{(Ref)}$ = Ex-GST HHV gas price of Rs. 600 /MMBTU

$FCC_{(Ref)}$ = Reference Fuel Cost Component on gas of Rs. 6.0469 /kWh

- 5.4 Gas Infrastructure Development Cess (GIDC) has not been assumed in the reference gas price of Rs. 600/MMBTU. In case GIDC is applicable to CPPs, the same shall be



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included in the gas price on submission of verifiable documentary evidence and fuel cost component shall be revised as per the prescribed fuel price adjustment mechanism.

Whether the fixed cost component for Gas is reasonable?

- 5.5 The fixed cost component of Rs. 1.4542/kWh was proposed for Gas based captive power plants. The proposed fixed cost component was based on the fixed cost component allowed by the Authority to existing gas based captive power plants after appropriate indexations.
- 5.6 Majority of the commentators and interveners suggested that this component is low considering the CPPs have old plants and equipment which require additional cost in O&M. Mekotex and Ager Textile in their interventions requests provided OEM recommended figures of Rs. 2.24/kWh and 2.219/kWh respectively. The Authority during the hearing, directed Mekotex and Ager Textiles to support their claims with documentary evidence. However, the same has not been provided. Agar Textile, Mekotex and Hi-Tech Pipes referred fixed cost component of Rs. 1.53/kWh of PEPCO's tariff and requested that the same may be allowed by the Authority in the matter of gas based captive power plants after adjusting for average inflation of 4% per annum. According to the interveners the adjusted O&M component works out Rs. 2.49/kWh.
- 5.7 The Authority after considering the comments of the stakeholders decided to reestablish the fixed cost component. The Authority in a case of similar technology, has allowed variable and fixed O&M of Rs. 0.62/kWh and Rs. 0.35/kWh, respectively which after indexation works out Rs. 0.66/kWh and Rs. 0.4966/kWh, respectively. The fixed O&M cost component has been worked out on the basis of 75% plant factor on the basis of 9 month gas availability. The Authority has decided to adopt the same in the instant matter. For ROE and Insurance components, the Authority has decided to adopt the cost allowed to gas based captive power plants which is Rs. 0.3871/kWh and Rs. 0.1067/kWh respectively. The total fixed cost component works out Rs. 1.6504/kWh and the same is being approved for Gas based captive power plants.

In case of Gas based CPPs, whether the use of LNG shall be allowed?

- 5.8 The instant proceedings were initiated for captive power plants operating on gas. Therefore, the use of RLNG shall not be allowed.



6.0 OTHER ISSUES

6.1 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 mitigate the impact of current 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.

7.0 ORDER

7.1 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 Gas to the power purchaser on take and pay basis:

Reference Tariff

Description	Rs./kWh
Reference Fuel Cost Component	6.0469
Fixed Cost Component	1.6504
Total Generation Cost of delivered unit	7.6973

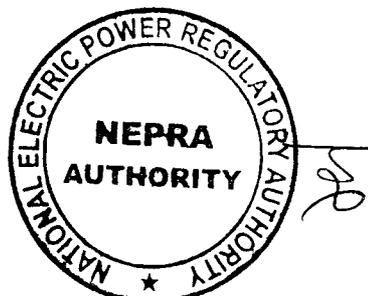
Adjustment on account of Fuel Price Variation

7.2 The fuel cost component shall be subject to adjustment for variation in the gas price from time to time in accordance with the following adjustment mechanism:

$$FCC_{(Rev)} = FCC_{(Ref)} \times GP_{(Rev)} / GP_{(Ref)}$$

Where:

$$GCC_{(Rev)} = \text{Fuel cost component on gas applicable for the billing cycle}$$

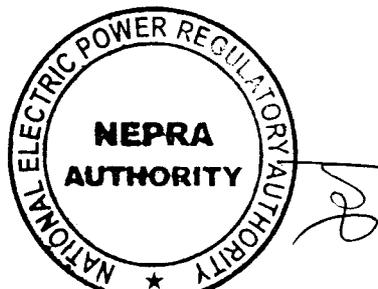


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- $GP_{(Rev)}$ = Revised gas price, excluding General Sales Tax applicable for the billing cycle as notified by OGRA for new captive power
- $GP_{(Ref)}$ = Ex-GST HHV gas price of Rs. 600 /MMBTU
- $FCC_{(Ref)}$ = Reference Fuel Cost Component on gas of Rs. 6.0469 /kWh

TERMS & CONDITIONS

- 7.3 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) The upfront tariff shall remain applicable till 31st December 2018.
 - iii) The term of the power purchase agreement under the upfront tariff shall be for calendar years 2017 and 2018.
 - iv) Sale/purchase shall be on take and pay basis.
 - v) There shall be no indexation in the fixed cost component.
 - vi) The consent of the power purchaser shall be mandatory.
 - vii) Minimum capacity to be offered under this upfront tariff shall be 3 MW.
 - viii) The power plants under this tariff shall not be entitled for any capacity charges.
 - ix) Gas Infrastructure Development Cess (GIDC) has not been assumed in the reference gas price of Rs. 600/MMBTU. In case GIDC is applicable to CPPs, the same shall be included in the gas price on submission of verifiable documentary evidence and fuel cost component shall be revised as per the prescribed fuel price adjustment mechanism.
 - x) 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.
 - xi) CPPs selling electricity to DISCOs under this upfront tariff shall not be allowed to purchase electricity from DISCOs at the same time in the same premises.
 - xii) The sponsor who is interested in opting Upfront Tariff shall submit unconditional formal application to NEPRA for approval of the Authority.

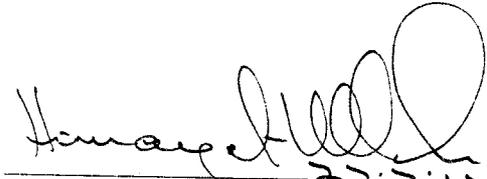


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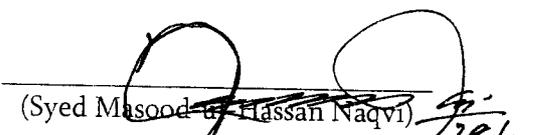


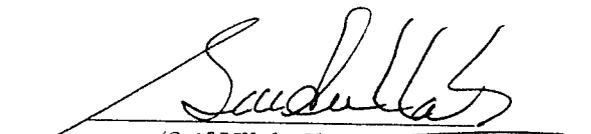
7.4 The above Order is to be notified in the official gazette in accordance with the provisions of Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act 1997.

AUTHORITY

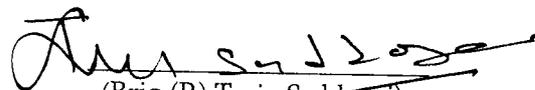

(Himayat Ullah Khan)
Member

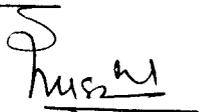

(Maj (R) Haroon Rashid)
Member


(Syed Misood ul Hassan Naqvi)
Member


(Saif Ullah Chattha)
Vice Chairman
28.7.2017




(Brig (R) Tariq Saddozai)
Chairman


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