



National Electric Power Regulatory Authority
Islamic Republic of Pakistan

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/UTCPP-2017/13084-13086

July 28, 2017

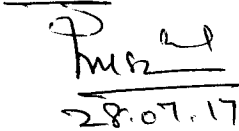
Subject: Determination of the Authority in the matter of Upfront Tariff for Captive Power Plants on RFO for Short Term Utilization of the Available Generation Capacity

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 (XL of 1997).
3. Order of the Authority's Determination is to be notified in the official Gazette.

Enclosure: As above


28.07.17
(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 RFO FOR SHORT TERM UTILIZATION OF THE
AVAILABLE GENERATION CAPACITY**

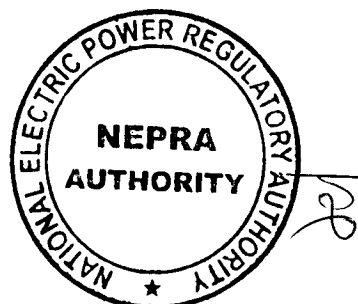
1. INITIATION OF PROCEEDINGS

- 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 RFO.
- 1.2 A proposal for upfront tariff for captive power plants on RFO 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 38.43%, HHV calorific value of 40,486 Btu/ Kg, LHV-HHV factor of 1.05 and reference RFO price of Rs. 45,116 per ton including freight charges of Rs. 4,780 per ton. The fuel cost component was also proposed to be adjusted for variation in RFO price and variation in actual calorific value. The following upfront tariff on RFO was proposed for captive power plants:

Description	Rs./kWh
Fuel Cost Component	10.3929
Fixed Cost Component	1.5300
Total	11.9229

- 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:

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





2. HEARING

2.1 The hearing was held as per schedule and was participated by Faisalabad Chamber of Commerce & Industries, K-Electric, Gadoon Textile Mills, Sitara Energy Limited, Nishat Power, PPDB, CPPA, NPCC, AQLAAL and BOI.

3. FILING OF INTERVENTION REQUEST

3.1 Following stakeholders filed intervention requests in the matter:

- i) Faisalabad Chamber of Commerce & Industries
- ii) K – Electric
- iii) Sitara Energy Limited (SEL)
- iv) Gadoon Textile Mills
- v) Pakistan Textile Exporters Association
- vi) Anwar Kamal Law Associates

Faisalabad Chamber of Commerce & Industries (FCCI)

3.2 FCCI 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

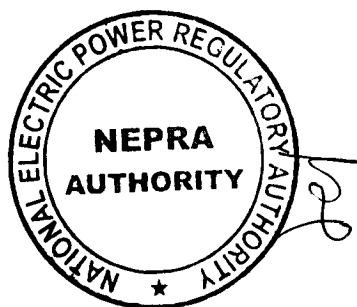
3.3 A summary of the intervention request filed by K – Electric is as under:

- 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 38.4% will vary with machine type?
- What will be the length of power acquisition contract?

Sitara Energy Limited (SEL)

3.4 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 upward revision.

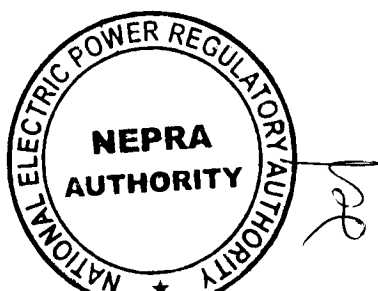


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- The object to avail all excess energy to mitigate the energy crisis will be seriously undermined if SPPs are arbitrarily not allowed to opt for the proposed upfront tariff and requested that an express direction may kindly be made in the final tariff determination by the Authority allowing SPPs to opt for the proposed upfront tariff.
- FCC is based on unreasonably high efficiency of 38.43% which is not attainable by existing SPPs and CPPs with old and used equipment. The Authority may note that the overall RFO consumption of an existing plant (even if it has been maintained with utmost due care, skill and diligence in accordance with prudent utility practices and standards) is approximately in the range of 245 grams/kWh and above. The specific fuel consumption is around 230 grams/ kWh, the impact of auxiliary is 4%-5%, cost of diesel used for startup 2-3 grams, sludge/ water drainage 1% of fuel consumed and power house/ line losses of around 1.5%.
- 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.
- To revise the FCC upwards to account for lower levels of efficiency of existing and older power plants.
- 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.
- Suggested fixed cost component of Rs. 3.27/kWh after incorporating indexation factor of 214% on the PEPCO approved rate of Rs. 1.53/kWh w.e.f. 1st January 2009.
- IPPs are afforded favorable terms and conditions such as “take or pay”, guaranteed rate of return and foreign arbitration.
- In the light of favorable regime for IPPs, Rs. 3.27/kWh is comparatively low and justified.
- SPPs are power generation and distribution companies. Their cost and features are similar to IPPs and higher than CPPs.



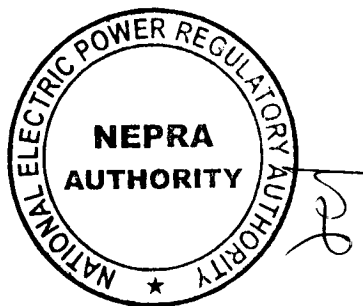
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Gadoon Textile Mills

3.5 A summary of the intervention request filed by Gadoon Textiles is as under:

- The Regulations, 2011 (as amended) are applicable to the generation of electricity from wind, hydel (only up to 25 MW run of the river/canal/steam), solar, bagasse, coal and gas based thermal generation only. The categorize fuel does not include RFO.
- CPPs are those generation facilities which produce power for self-consumption and not for sale. However, by amendment dated 28.07.2008, in Regulation #2 (k) of the Regulation 1999, the definition of CPP has been inserted to law. The purpose of the amendment was to provide requirements for issuance of generation license to such generator. However, the law does not provide for determination of tariff by NEPRA in case of sale to either distribution company or bulk power consumer. The same is to be bilateral.
- The Authority's attempt to proceed towards a competitive tariff regime shall be undermined by this upfront tariff.
- NEPRA has not provided the details/ description used for calculation of the upfront tariff. It is not understandable that NEPRA has based its working on which technology, what are the recommendations of the manufacturer, what are the technical parameters required under Prudent Utility Practices, which is the site/ region specific. There is a single rate (two part) proposal without financing options.
- The CPPs and even SPPs are generally simple cycle based operated on small engines. This effectively affects the efficiency of the plant and in turn the tariff.
- The O&M of the complex is based on economy of the size of the plant. The Advertisement is silent on to the assumptions used by NEPRA in arriving at the upfront tariff proposal.
- The upfront tariff proposal does not specify the period for which NEPRA intends to keep the proposed tariff intact.
- The upfront tariff proposal does not appear to be for brand new machinery rather the Advertisement provides that determination is for 'short term utilization' (unlike IPPs) of the "available generation capacity for captive power plants."
- Fixed cost component of Rs. 1.53/kWh determined by WAPDA in 2009 has been used in the proposed tariff by the Authority without providing any breakup of the same.



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- The upfront tariff is likely to be for new machines only who would incur the financial cost (CAPEX and lending costs etc). Tariff determined in 2006/2009 was without return on assets, any financial cost, without placing variable O&M as part of fuel cost component.
- The startup cost on Diesel that ranges, generally, about Rs. 1/kWh is apparently not considered in the upfront tariff proposal.

Pakistan Textile Exporters Association

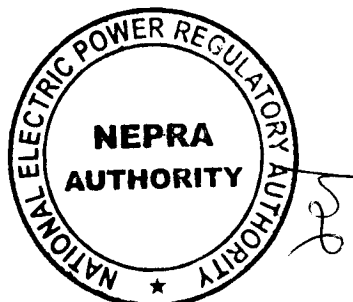
3.6 A summary of the intervention request filed by Pakistan Textile Exporters Association is as under:

- Submitted that scheduled and unscheduled load shedding is resulting in losing export orders.
- Requested the Authority for provision of uninterrupted supply of electricity by utilizing all the 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 the pipelines.

Anwar Kamal Law Associates

3.7 A summary of the intervention request filed by Anwar Kamal Law Associates is as under:

- 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?



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- Burning RFO on such low efficiency of 38.43% especially in the scenario that cheaper RFO power plants of 45% 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.

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

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

- 4.1 The proposed fuel cost component was based on net LHV thermal efficiency of 38.43%. SEL in its intervention request submitted that the proposed efficiency is unreasonably high and is not attainable by existing SPPs and CPPs with old and used equipment. SEL further submitted that the overall RFO consumption of a well maintained plant is approximately 245 grams/kWh and above (corresponding to 36.15% efficiency). SEL also submitted that the specific fuel consumption is around 230 grams/ kWh, the impact of auxiliary is 4%-5%, cost of diesel used for startup 2-3 grams, sludge/ water drainage 1% of fuel consumed and power house/ line losses of around 1.5%. Non of the other interveners objected the proposed efficiency.
- 4.2 The Authority has considered the submissions made by the stakeholders. The proposed thermal efficiency was based on the approved net LHV thermal efficiency of 38.43% in case of Sitara Energy Limited in the matter of approval of PAR of FESCO. 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 38.43% for calculation of fuel cost component for CPPs generating electricity on RFO for sale of surplus power to the system.
- 4.3 Accordingly on the basis of net LHV thermal efficiency of 38.43%, HHV calorific value of 18,364 BTUs/lb., LHV-HHV factor of 1.05 and reference Ex-GST HHV price of Rs. 45,116/ton, the fuel cost component works out Rs. 10.3916/kWh and the same is being approved. The approved fuel cost component shall be subject to adjustment for variation



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in the furnace oil price and calorific value from time to time according to the following fuel price adjustment mechanism:

$$FCC_{(Rev)} = 10.3916 \times P_{(Rev)} / P_{(Ref)} \times CV_{(Ref)} / CV_{(Rev)}$$

Where:

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

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

$P_{(Ref)}$ = Reference Ex-GST delivered RFO price of Rs. 45,116/ton.

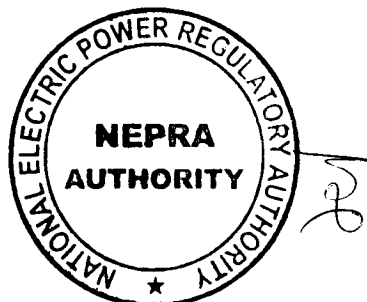
$CV_{(Ref)}$ = Reference calorific value of 18,364 BTUs/lb.

$CV_{(Rev)}$ = Revised actual calorific value subject to minimum of 18,200 BTUs/lb.

5. Whether the fixed cost component for each technology is reasonable?

5.1 The fixed cost component of Rs. 1.53/kWh was proposed for RFO based Captive Power Plants. The proposed fixed cost component was based on the fixed cost component approved in the case of Sitara Energy Limited in the matter of approval of PAR of FESCO. According to the draft power purchase agreement between FESCO and SEL, Fixed Cost Component has been defined as *“The tariff component payable per kWh delivered by the company which includes but not limited to O&M cost, tax on income of the company, insurance cost, return on investment, duties etc.”*. The agreed fixed cost component between FESCO and SEL was not subject to any indexation/adjustment as per the draft PPA.

5.2 SEL in its intervention request submitted that the fixed cost component is unreasonably low. SE: requested that 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. SEL Suggested fixed cost component of Rs. 3.27/kWh after incorporating indexation factor of 214% on the PEPCO approved rate of Rs. 1.53/kWh w.e.f. 1st January 2009. Gadoon Textile in its intervention request submitted that the startup cost on Diesel that ranges, generally, about Rs. 1/kWh is apparently not considered in the upfront tariff proposal. None of the other stakeholders commented on the fixed cost component.



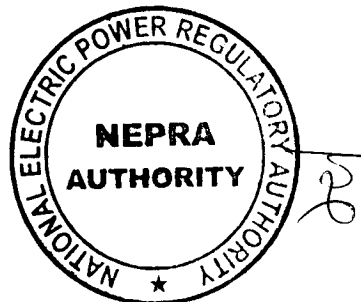
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5.3 The Authority has considered the comments of the stakeholders and decided to reestablish the fixed cost component. The variable and fixed O&M cost allowed to RFO based reciprocating engines of IPPs is Rs. 0.9564/kWh and Rs. 0.4079/kWh respectively. The fixed O&M cost component has been worked out on the basis of 75% plant factor. The Authority considers that similar cost should also be allowed to RFO based captive power plants. Accordingly, the Authority has decided to approve Rs. 1.3643/kWh on account of fixed and variable O&M cost. For insurance and ROE 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. 1.8581 and the same is being approved for RFO based captive power plants.

6. OTHER ISSUES

- 6.1 Regarding the issues raised by Gadoon Textile Mills, it shall be appropriate to mention that RFO has been included in the Upfront Tariff Regulations as designated fuel through amendment. Regarding the determination of tariff for CPPs, the Authority considers that any captive power plant can sell surplus power and the rate shall be determined/approved by the Authority.
- 6.2 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.



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7. 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 RFO to the power purchaser on take and pay basis:

Reference Tariff

Description	Rs./kWh
Reference Fuel Cost Component	10.3916
Fixed Cost Component	1.8581
Total Generation Cost of delivered unit	12.2497

Adjustment on account of Fuel Price Variation

- 7.2 The fuel cost component shall be subject to adjustment for variation in the furnace oil price and calorific value from time to time in accordance with the following adjustment mechanism:

$$FCC_{(Rev)} = 10.3916 \times P_{(Rev)} / P_{(Ref)} \times CV_{(Ref)} / CV_{(Rev)}$$

Where:

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

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

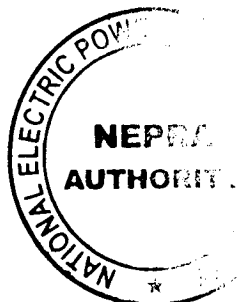
$P_{(Ref)}$ = Reference Ex-GST delivered RFO price of Rs. 45,116/ton.

$CV_{(Ref)}$ = Reference calorific value of 18,364 BTUs/lb.

$CV_{(Rev)}$ = Revised actual calorific value subject to minimum of 18,200 BTUs/lb.

TERMS & CONDITIONS


- 7.3 The determined upfront tariff shall be subject to the following terms & conditions:
- Any captive power plant/small power producer can opt the upfront tariff for sale of surplus power to the system.
 - The upfront tariff shall remain applicable till 31st December 2018.
 - The term of the power purchase agreement under the upfront tariff shall be for calendar years 2017 and 2018.



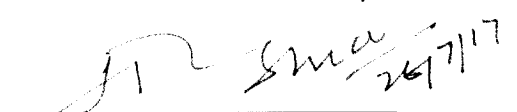
- iv) Sale/purchase shall be on take and pay basis.
- v) There shall be no indexation in the fixed cost component.
- vi) The consent of the power purchaser shall be mandatory.
- vii) Minimum capacity to be offered under this upfront tariff shall be 3MW.
- viii) The power plants under this tariff shall not be entitled for any capacity charges.
- ix) 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.
- x) CPPs selling electricity to DISCOs under this upfront tariff shall not be allowed to purchase electricity ~~simultaneously~~ ^{at the same time} from DISCOs in the same premises. *OK*
- xi) The sponsor who is interested in opting Upfront Tariff shall submit unconditional formal application to NEPRA for approval of the Authority.

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



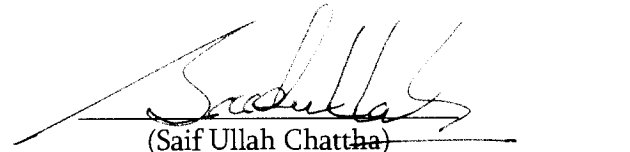
(Himayat Ullah Khan)
Member




(Maj (R) Haroon Rashid)
Member



(Syed Masood ul-Hassan Naqvi) 26/7
Member

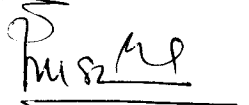


(Saif Ullah Chattha)
Vice Chairman 28-7-2017



(Brig (R) Tariq Saddozai)
Chairman





28.07.17