



Registrar

**National Electric Power Regulatory Authority**  
**Islamic Republic of Pakistan**

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No. NEPRA/R/TRF-UTB-2013/10164-10166  
July 7, 2015


Subject: **Decision of the Authority in the matter of Adjustment of Upfront Tariff for New Bagasse Based Co-generation Projects**

Dear Sir,

Enclose please find herewith the subject Decision of the Authority along with Annex-I and II (16 pages).

2. The Decision is being intimated to the Federal Government for the purpose of notification of the approved tariff in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).
3. Order of the Authority at para 6 of the Decision is to be notified in the official Gazette.

Enclosure: As above

  
07.07.15  
( 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.



**DECISION OF THE AUTHORITY IN THE MATTER OF ADJUSTMENT OF  
UPFRONT TARIFF FOR NEW BAGASSE BASED CO-GENERATION PROJECTS**

The National Electric Power Regulatory Authority (hereinafter referred to as the "Authority") approved the upfront tariff for New bagasse based Co-generation projects to be set up under the frame work of Co-generation policy of Government of Pakistan (hereinafter referred to as GoP) on May 29, 2013 containing the reference approved tariff for 30 years along with the applicable terms and conditions for the Co-generation projects and notified by GoP vide SRO No. 771(1)/2013 dated September 3, 2013. The aforementioned decision of the Authority was modified to the extent of certain amendments in the terms and conditions on August 28, 2013 and notified by GoP vide SRO No.938(1)/2013 dated October 14, 2013.

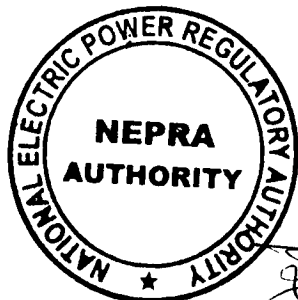
2. The Authority, after detailed deliberations and regulatory process, determined the following project costs to form the bases of the upfront tariff:

Reference Project Cost	(US\$ M)
EPC Cost	0.8112
Other Project Cost	0.0695
Financing Fees & Charges	0.0176
Interest during Construction (IDC)	0.0984
<b>Total</b>	<b>0.9966</b>

**3. One Time Adjustment**

3.1 The reference Upfront Tariff was allowed to be adjusted on May 31, 2015, i.e. the reference commercial operations dated (COD) of the power projects, on account of project cost variations during the construction period of the projects. The following adjustment in the reference upfront tariff was allowed:

- i. 40% of the approved total project cost assumed in foreign currency (USD) will be adjusted with respect to PKR/US\$ exchange rate variation to be worked out on quarterly basis as per the assumed schedule of debt and equity injections spread over





20 months of project construction period starting from October 01, 2013 as given hereunder:

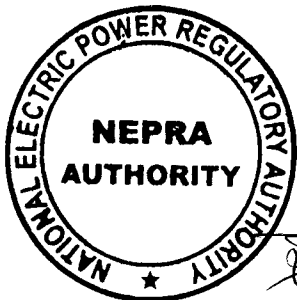
Debt & Equity Injections	Qtr. 1	Qtr. 2	Qtr. 2	Qtr. 4	Qtr. 5	Qtr. 6	2 months after Qtr. 6	Total
% of total project cost	20%	20%	15%	15%	10%	10%	10%	100%

- ii. The debt service component of reference Upfront Tariff will be adjusted on account on variation in quarterly KIBOR over the reference KIBOR of 9.50% plus spread on KIBOR at 3%.
- iii. The return on equity component (ROE) including return on equity during construction component (ROEDC) of reference Upfront Tariff will be revised on account of variation in PKR/US\$ exchange rate over the reference PKR/US\$ exchange rate of Rs. 98.

3.2 Further, the Fuel cost component of tariff was allowed to be adjusted on account of variation in price of fuel (bagasse) on yearly basis in advance (w.e.f. 1st of October of each applicable year), and the first such adjustment in this regard was to be made applicable after May 31, 2015.

3.3 The Authority has observed that during the period between October 1, 2013 and May 30, 2015 the Pakistan Rupee has generally depreciated against the US Dollar. During this period, the value of 1 US Dollar ranged between a quarterly average of 98.38 PKR and 106.77 PKR. Based on the monthly variations in USD/PKR exchange rates over the period under consideration, the Authority has decided to apply the following quarterly exchange rates for the purpose of adjustment of reference project cost:

	Qtr. 1	Qtr. 2	Qtr. 2	Qtr. 4	Qtr. 5	Qtr. 6	2 months after Qtr. 6
USD/PKR Exchange rate	106.77	103.88	98.38	100.31	102.07	101.20	101.67





3.4 Further, the Authority has observed that during the period between October 1, 2013 and May 30, 2015 the Karachi Interbank Offered Rate (KIBOR) has shown significant variations over the reference KIBOR rate of 9.50%. Based on the monthly variations in KIBOR rates over the period under consideration, the Authority has decided to apply the following quarterly KIBOR rates for the purpose of adjustment of interest during construction portion of project cost:

	Qtr. 1	Qtr. 2	Qtr. 2	Qtr. 4	Qtr. 5	Qtr. 6	Qtr. 7
KIBOR	9.43%	10.09%	10.18%	10.17%	10.18%	9.63%	7.99%
Premium	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Total Interest Rate	12.43%	13.09%	13.18%	13.17%	13.18%	12.63%	10.99%

3.5 In accordance with the adjustment mechanism outlined in para 3, the Authority hereby approves the following adjusted project cost:

Revised Project Cost	(US\$ Million)
EPC Cost	0.7960
Other Project Cost	0.0682
Financing Fees & Charges	0.0173
Interest during Construction (IDC)	0.0980
<b>Total</b>	<b>0.9795</b>

3.6 The impact of the aforementioned adjustment in project cost on the ROE and Debt Servicing components of the tariff is tabulated hereunder:

	Original Reference Component	Adjusted Reference Component	Adjustment Applied
Return on Equity	Rs. 1.0155/kWh	Rs. 1.0346/kWh	One Time Adjustment in Project Cost
Debt Service	Rs. 3.8249/kWh	Rs. 3.8970/kWh	One Time Adjustment in Project Cost





**4. Indexation of Components**

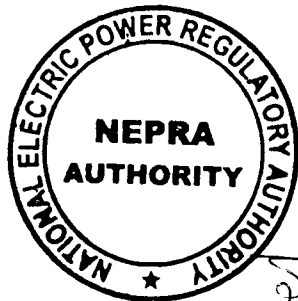
4.1 In addition to the above, the fuel cost component of tariff has been adjusted in accordance with the fuel price adjustment mechanism and terms and conditions stipulated in the Authority's decision dated 28 August, 2013 as under:

	Reference	Revised
USD/PKR Exchange Rate	98	101.60
Coal Price per Ton	81.4	77.31
Bunker Index	641.8219	629.6417
Marine Freight	19.19	18.83
Marine Insurance	0.0814	0.0773
Applicable Coal Price	100.67	100.67
Bagasse price Rs./ton	2861.12	2966.18
Fuel Cost Component (Rs./kWh)	5.7702	5.9822

4.2 The adjusted fuel cost component of tariff will be applicable w.e.f June 01, 2015 and will subsequently be indexed on annual basis w.e.f 1<sup>st</sup> of October of each applicable year.

4.3 Additionally, the following components of tariff have been adjusted to form the reference adjusted upfront tariff as under:

	Original Reference Component	Adjusted Reference Component	Adjustment Applied
Variable O&M Local	Rs. 0.1074/kWh	Rs. 0.1197/kWh	Pakistan CPI
Variable O&M Foreign	Rs. 0.3223/kWh	Rs. 0.3393/kWh	US\$ and US CPI
Fixed O&M Local	Rs. 0.2865/kWh	Rs. 0.3194/kWh	Pakistan CPI
Insurance	Rs. 0.2204/kWh	Rs. 0.2204/kWh	No Adjustment
Working Capital	Rs. 0.1924/kWh	Rs. 0.1733/kWh	KIBOR Variation





**5. Adjusted Reference Tariff:**

5.1 Based on the revised approved project cost and indexation of some of the tariff components as detailed in preceding paras, the levelized tariff based on 30 years term has been worked out as given hereunder:

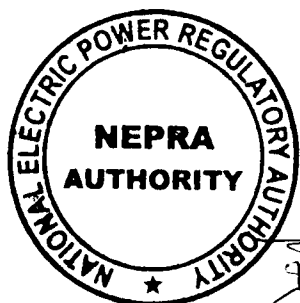
Tariff	US ¢ /kWh	Rs. /kWh
For 01 - 10 years	11.8956	12.0859
For 11 - 30 years	8.0598	8.1888
Levelized Tariff 1-30 years	10.5601	10 7291

5.2 The above adjustment in tariff will be applicable only to those projects who have been granted the upfront tariff for bagasse based co-generation power projects and have achieved commercial operations within the stipulated time period. Each project having achieved commercial operations will be required to file separate requests for grant of adjusted upfront tariff and subsequent indexations.

**6. ORDER**

The Authority hereby approves the following Upfront Tariff for New Bagasse based Co-generation projects for delivery of electricity to the power purchaser.

Tariff components	1-10 years (Rs/kWh)	11-30 years (Rs./kWh)	Indexations
Fuel Cost	5.9822	5.9822	Fuel price
Variable O&M Local	0.1197	0.1197	Local CPI
Variable O&M Foreign	0.3393	0.3393	PKR/US\$, US CPI
Fixed O&M Local	0.3194	0.3194	Local CPI
Insurance	0.2204	0.2204	-
Working Capital	0.1733	0.1733	KIBOR
Debt Service	3.8970	-	KIBOR
Return on Equity	1.0346	1.0346	PKR/US\$
<b>Total</b>	<b>12.0859</b>	<b>8.1888</b>	





- i) The above reference tariff is applicable for 30 years from commencement of commercial operation date (COD).
- ii) The above tariff is applicable for new Co-generation projects based on Bagasse.
- iii) The above tariff has been worked out on the basis of reference PKR/US\$ rate of Rs. 101.6.
- iv) The reference component wise Adjusted Upfront Tariff table is attached herewith as Annex-I
- v) The reference Adjusted Debt Service schedule is attached herewith as Annex-II.

**I. Pass-Through Items**

If the company is obligated to pay any tax on its income from generation of electricity, or any duties and/or taxes, not being of refundable nature, are imposed on the company up to the commencement of its commercial operations for import of its plant, machinery and equipment, the exact amount paid by the company on these accounts shall be reimbursed by the power purchaser on production of original receipts. This payment should be considered as a pass-through payment spread over a twelve months period. Furthermore, in such a scenario, the company shall also submit to the power purchaser details of any tax savings and the power purchaser shall deduct the amount of these savings from its payment to the company on account of taxation.

The adjustment for duties and/or taxes will be restricted only to the extent of duties and/or taxes directly imposed on the company. No adjustment for duties and/or taxes imposed on third parties such as contractors, suppliers, consultants, etc., excluding adjustment for taxes imposed on dividend as stated below, will be allowed.

Withholding tax on dividends will also be allowed as a pass through item just like other taxes. The power purchaser shall make payment on account of withholding tax at the time of actual payment of dividend, on production of original receipts, subject to maximum of 7.5% of return on equity. In case the company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the net return on equity) would be carried forward and accumulated so that the





company is able to recover the same as a pass through from the power purchaser in future on the basis of the total dividend payout. Adjustment for variation in tax rate on dividend from 7.5% shall also be allowed as a pass through item by the power purchaser, after satisfying itself that tax rates have actually varied. The company shall also submit to the power purchaser details of any tax savings and the power purchaser shall deduct the amount of these savings from its payment to the company on account of taxation.

II. Indexation/adjustment

The following indexation shall be applicable to the reference upfront tariff:

a) Fuel Cost Component

Fuel cost component of tariff will be adjusted on account of variation in price of fuel (bagasse) on yearly basis in advance (w.e.f. 1<sup>st</sup> of October of each applicable year) as per the formula given hereunder.

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

Where;

$FCC_{(Rev)}$  = Revised fuel cost component of tariff for the applicable year.

$FCC_{(Ref)}$  = Reference fuel cost component of tariff at the time of determination.

$BFP_{(Rev)}$  = Revised price of bagasse in Rs/ton as determined in accordance with mechanism set out below.

$BFP_{(Ref)}$  = Reference price of bagasse for the relevant year. Current reference price is Rs. 2966.23/ton

$BFP_{(Rev)}$  =  $CPCIF_{(Rev)} \times 6905/23810$







Where;

$$\text{CPCIF}_{(\text{Rev})} = \{ \text{CPFOB}_{(\text{Rev})} + \text{MF}_{(\text{Rev})} + \text{MI}_{(\text{Rev})} \} \times \text{ER}_{(\text{Rev})}$$

Where;

$\text{CPCIF}_{(\text{Rev})}$  = Revised CIF price of coal in Rs/ton for the applicable year.

$\text{CPFOB}_{(\text{Rev})}$  = Revised FOB price of coal expressed in US\$/ton based on monthly average of prices published in the Argus McCloskey's API4 index for the relevant year.

$\text{MF}_{(\text{Rev})}$  = Revised marine freight of coal per ton as worked out below.

$$\text{MF}_{(\text{Rev})} = \text{US\$ } 18.83 \times \text{BIX}_{(\text{Rev})} / \text{BIX}_{(\text{Ref})}$$

Where;

$\text{BIX}_{(\text{Rev})}$  = Revised monthly average of the daily Bunker Index price for 380-CST published by the Bunker Index for the relevant year.

$\text{BIX}_{(\text{Ref})}$  = Reference monthly average of the daily Bunker Index price of 380-CST published by the Bunker Index. Current reference is US\$ 629.6417/ton.

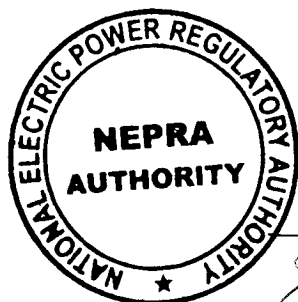
$$\text{MI}_{(\text{Rev})} = \text{CPFOB}_{(\text{Rev})} \times 0.1\%$$

$\text{ER}_{(\text{Rev})}$  = Revised monthly average PKR/US\$ exchange rate for the relevant month.

The constants such as 6905, 23810 and US\$ 18.83 are fixed values representing LHV value of bagasse in btu/kg, LHV value of coal in btu/kg and fixed value of marine freight charges per ton of coal respectively.

Note:

1. Applicable year means, the year for which adjustment/indexation of fuel cost component is required starting from 1<sup>st</sup> of July and ending on 30<sup>th</sup> of June.





2. Relevant year means the year immediately preceding the applicable year for adjustment/indexation of fuel cost component.

b) O&M Cost Component

The local O&M component will be adjusted on account of local Inflation and foreign O&M component will be adjusted on account of variation in Rupee/Dollar exchange rate and US CPI. Quarterly adjustments for inflation and exchange rate variation will be made on 1st July, 1st October, 1st January & 1st April respectively on the basis of the latest available information with respect to Pakistan CPI (general), US CPI (notified by US bureau of labor statistics) and revised TT&OD Selling rate of US Dollar (notified by the National Bank of Pakistan). The mode of indexation will be as under:

i) Fixed O&M Local

$$F O\&M_{(REV)} = O\&M_{(REF)} * CPI_{(REV)} / 198.16$$

Where:

$F O\&M_{(REV)}$  = The revised applicable Fixed O&M local component of tariff indexed with Pakistan CPI.

$O\&M_{(REF)}$  = The reference fixed O&M local component of tariff.

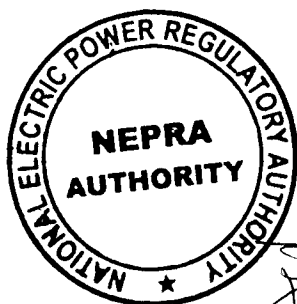
$CPI_{(REV)}$  = The Revised Consumer Price Index (General) for the relevant month.

$CPI_{(REF)}$  = The Consumer Price Index (General) of April 2015 notified by the Federal Bureau of Statistics.

$US CPI_{(REV)}$  = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.

ii. Variable O&M

$$V O\&M_{(LREV)} = O\&M_{(LREF)} * CPI_{(REV)} / 198.16$$





$$V O\&M_{(FREV)} = O\&M_{(FREF)} * USCPI_{(REV)} / 236.119 * ER_{(REV)} / 101.60$$

Where:

$V O\&M_{(LREV)}$  = The revised applicable Variable O&M local component of tariff indexed with CPI.

$V O\&M_{(FREV)}$  = The revised applicable Variable O&M foreign component of tariff indexed with US CPI and exchange rate variation.

$O\&M_{(LREF)}$  = The reference variable O&M local component of tariff.

$O\&M_{(FREF)}$  = The reference variable O&M foreign component of tariff.

$CPI_{(REV)}$  = The Revised Consumer Price Index (General) for the relevant month.

$CPI_{(REF)}$  = The Consumer Price Index (General) of April 2015 notified by the Federal Bureau of Statistics

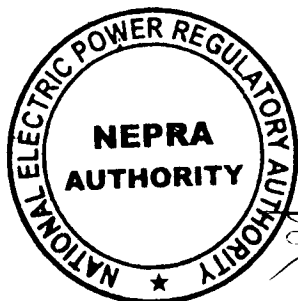
$US CPI_{(REV)}$  = The Revised US Consumer Price Index (All Urban Consumers) notified by the US Bureau of Labor Statistics.

$US CPI_{(REF)}$  = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of March 2015.

$ER_{(REV)}$  = The revised TT&OD selling rate of US dollar as notified by the National Bank of Pakistan.

c) Adjustment of working capital cost

The cost of working capital shall be adjusted on account of variation in 3-month KIBOR over the reference KIBOR of 7.99% while premium over KIBOR 2% remaining the same for the entire tariff control period.





d) Adjustment of debt servicing component

The interest part of fixed charge component will remain unchanged throughout the tariff control period except for the adjustment due to variation interest rate as a result of variation in quarterly KIBOR according to the following formula;

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 7.99\%) / 4$$

Where:

$\Delta I$  = the variation in interest charges applicable on local loan corresponding to variation in quarterly KIBOR.  $\Delta I$  can be positive or negative depending upon whether  $KIBOR_{(REV)} > \text{or} < 7.99\%$ . The interest payment obligation will be enhanced or reduced to the extent of  $\Delta I$  for each quarter under adjustment applicable on quarterly basis.

$P_{(REV)}$  = is the outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculations date.

e) Return on Equity

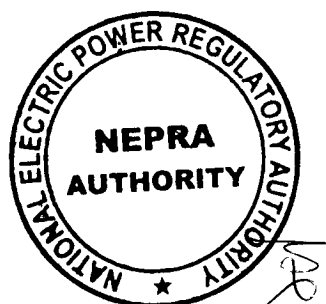
Return on equity (ROE) as well as Return on Equity during Construction (ROEDC) component of tariff shall be adjusted for variation in PKR/US\$ exchange rate according to the following formula:

$$ROE_{(REV)} = ROE_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

$$ROEDC_{(REV)} = ROEDC_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

Where;

$ROE_{(REV)}$  = Revised Return on Equity component of tariff expressed in Rs/kWh adjusted with exchange rate variation for the relevant period. )





ROEDC <sub>(REV)</sub>	=	Revised Return on Equity during Construction component of tariff in Rs/kWh adjusted with exchange rate variation for the relevant period.
ROE <sub>(REF)</sub>	=	Reference Return on Equity component of tariff expressed in Rs/kWh.
ROEDC <sub>(REF)</sub>	=	Reference Return on Equity during Construction component of tariff expressed in Rs/kWh.
ER <sub>(REV)</sub>	=	Revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.
ER <sub>(REF)</sub>	=	Reference TT and OD selling rate of US dollar of Rs. 101.60.

#### IV. Terms and conditions of Upfront Tariff

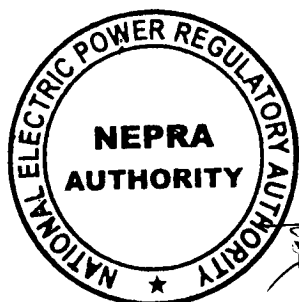
The following terms and conditions will be applicable for Co-generation projects who opt for the Adjusted Upfront Tariff:

- i) The Adjustment of Upfront tariff will be applicable only to those Co-generation projects which have been granted the upfront tariff for bagasse based cogeneration power projects.
- ii) There is no maximum or minimum cap for the installed capacity by co-generation projects.
- iii) The Adjusted Upfront Tariff will be applicable and become effective after Commercial Operation Date (COD) of the project.
- iv) The project sponsors will be required to achieve COD within two years from date of grant of Upfront tariff by the Authority in each case.





- v) All energy offered for sale by the Co-generation projects shall be taken by the power purchaser on priority.
- vi) Power Producers shall have the option to offer energy to the respective Distribution Company (DISCO) at 11 KV or 132 KV, or to the CPPA/NTDC at 132 KV, provided that the cost of interconnection, grid station upgrades etc. for power evacuation shall be incurred by the respective DISCO/CPA.
- vii) This tariff will be applicable for a period of thirty years (30) from the commencement of commercial operations.
- viii) The Co-generation projects based on foreign financing may opt for the approved Upfront Tariff. However, the risk of currency exchange rate for foreign financing will be borne by the project sponsors.
- ix) In the Upfront Tariff no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same shall be distributed between the power purchaser and the power producer in accordance with the applicable GoP Policy, as amended from time to time.
- x) The Co-generation projects are allowed to use other biomass fuel such as rice husk, cotton stalk etc. in combination with Bagasse or separately. However use of coal imported or local is not allowed.
- xi) To safeguard interest of consumers, the Authority may review the fuel pricing mechanism stipulated above in accordance with NEPRA applicable law, after due consultation with the affected/interested parties, if it is deemed that there is exorbitant/unreasonable increase in international coal prices. Similarly, to mitigate risk to the power producer and to encourage the investors to put up bagasse based(indigenous fuel) cogeneration projects, the reference CIF coal price of US\$ 100.67/ton used at the time of this determination shall be considered the floor/minimum price for the purpose of the Fuel cost Component.

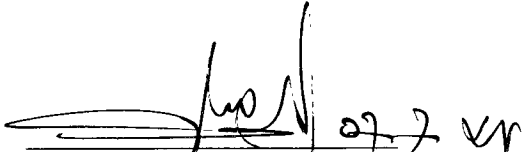


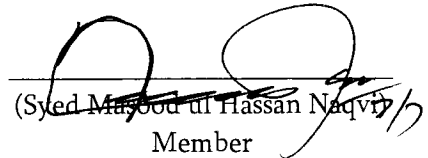


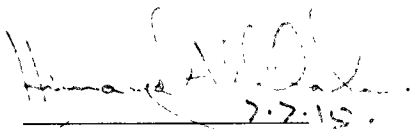
- xii) A single Adjusted Upfront Tariff will be applicable for all co-generation projects that have achieved commercial operations under the Upfront Tariff regime. All projects opting for the upfront tariff will initially be granted the original upfront tariff until the time they achieve commercial operations, whereupon such projects will become eligible for the Adjusted Upfront Tariff. No project specific adjustments shall be taken into account.

7. The order at paragraph 6 is recommended for notification by the Federal Government in the official gazette in accordance with Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997

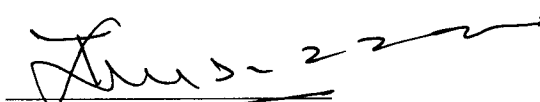
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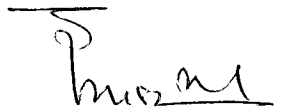
  
(Khawaja Muhammad Naeem)  
Member

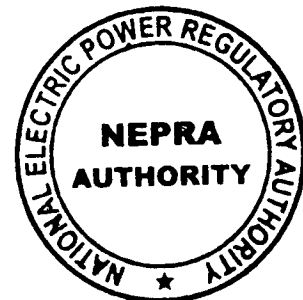
  
(Syed Masood ul Hassan Naqvi)  
Member

  
(Himayat Ullah Khan)  
Member

(On Duty.)  
(Major (Rtd.) Haroon Rasheed)  
Member

  
(Brig. (R) Tariq Saddozai)  
Chairman 7/7/15

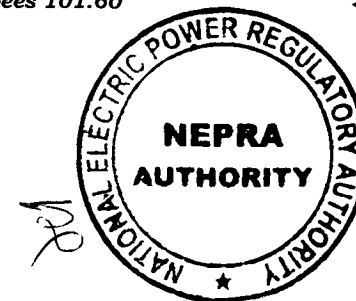
  
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**Reference Adjusted Upfront Tariff for New Bagasse based Co-generation Power Projects**

Year	Fuel cost component	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Insurance	Working capital cost	Return on Equity	ROE During Construction	Loan Repayment	Interest Charges	Total Tariff
	Rs./kWh	Rs./kWh	Rs./kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs./kWh	Rs. / kWh
1	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	1.1926	2.7045	12.0860
2	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	1.3488	2.5483	12.0860
3	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	1.5254	2.3716	12.0860
4	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	1.7252	2.1718	12.0860
5	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	1.9512	1.9458	12.0860
6	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	2.2068	1.6903	12.0860
7	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	2.4958	1.4012	12.0860
8	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	2.8227	1.0743	12.0860
9	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	3.1925	0.7046	12.0860
10	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	3.6106	0.2864	12.0860
11	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
12	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
13	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
14	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
15	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
16	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
17	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
18	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
19	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
20	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
21	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
22	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
23	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
24	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
25	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
26	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
27	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
28	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
29	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
30	5.9822	0.1197	0.3393	0.3194	0.2204	0.1733	0.9380	0.0965	-	-	8.1889
<b>Levelized Tariff</b>	<b>5.9822</b>	<b>0.1197</b>	<b>0.3393</b>	<b>0.3194</b>	<b>0.2204</b>	<b>0.1733</b>	<b>0.9380</b>	<b>0.0965</b>	<b>1.3073</b>	<b>1.2328</b>	<b>10.7291</b>

*Levelized Tariff (1-30 years) discounted at 10% per annum = US Cents 10.5601/kWh at reference exchange rate of 1US\$=Rupees 101.60*





**Reference Adjusted Upfront Tariff for New Bagasse based Co-generation Power Projects  
Debt Servicing Schedule**

Period	Local Debt					Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Service Rs./kWh
	Principal Million \$	Repayment Million \$	Mark-Up Million \$	Balance Million \$	Debt Service Million \$	Principal Million Rs.	Repayment Million Rs.	Mark-Up Million Rs.	Balance Million Rs.	Debt Service Million Rs.			
	0.7836	0.0101	0.0245	0.7735	0.0346	79.6104	1.0262	2.4878	78.5842	3.5141	0.2845	0.6897	0.9743
	0.7735	0.0104	0.0242	0.7630	0.0346	78.5842	1.0583	2.4558	77.5259	3.5141	0.2934	0.6808	0.9743
	0.7630	0.0107	0.0238	0.7523	0.0346	77.5259	1.0914	2.4227	76.4345	3.5141	0.3026	0.6717	0.9743
	0.7523	0.0111	0.0235	0.7412	0.0346	76.4345	1.1255	2.3886	75.3090	3.5141	0.3120	0.6622	0.9743
1	0.7836	0.0423	0.0960	0.7412	0.1383	79.6104	4.3015	9.7548	75.3090	14.0563	1.1926	2.7045	3.8970
	0.7412	0.0114	0.0232	0.7298	0.0346	75.3090	1.1607	2.3534	74.1483	3.5141	0.3218	0.6525	0.9743
	0.7298	0.0118	0.0228	0.7180	0.0346	74.1483	1.1969	2.3171	72.9514	3.5141	0.3318	0.6424	0.9743
	0.7180	0.0121	0.0224	0.7059	0.0346	72.9514	1.2343	2.2797	71.7170	3.5141	0.3422	0.6320	0.9743
	0.7059	0.0125	0.0221	0.6933	0.0346	71.7170	1.2729	2.2412	70.4441	3.5141	0.3529	0.6213	0.9743
2	0.7412	0.0479	0.0905	0.6933	0.1383	75.3090	4.8649	9.1914	70.4441	14.0563	1.3488	2.5483	3.8970
	0.6933	0.0129	0.0217	0.6804	0.0346	70.4441	1.3127	2.2014	69.1314	3.5141	0.3639	0.6103	0.9743
	0.6804	0.0133	0.0213	0.6671	0.0346	69.1314	1.3537	2.1604	67.7777	3.5141	0.3753	0.5989	0.9743
	0.6671	0.0137	0.0208	0.6534	0.0346	67.7777	1.3960	2.1181	66.3817	3.5141	0.3870	0.5872	0.9743
	0.6534	0.0142	0.0204	0.6392	0.0346	66.3817	1.4396	2.0744	64.9420	3.5141	0.3991	0.5751	0.9743
3	0.6933	0.0542	0.0842	0.6392	0.1383	70.4441	5.5021	8.5542	64.9420	14.0563	1.5254	2.3716	3.8970
	0.6392	0.0146	0.0200	0.6246	0.0346	64.9420	1.4846	2.0294	63.4574	3.5141	0.4116	0.5626	0.9743
	0.6246	0.0151	0.0195	0.6095	0.0346	63.4574	1.5310	1.9830	61.9264	3.5141	0.4245	0.5498	0.9743
	0.6095	0.0155	0.0190	0.5940	0.0346	61.9264	1.5789	1.9352	60.3475	3.5141	0.4377	0.5365	0.9743
	0.5940	0.0160	0.0186	0.5779	0.0346	60.3475	1.6282	1.8859	58.7193	3.5141	0.4514	0.5228	0.9743
4	0.6392	0.0612	0.0771	0.5779	0.1383	64.9420	6.2228	7.8335	58.7193	14.0563	1.7252	2.1718	3.8970
	0.5779	0.0165	0.0181	0.5614	0.0346	58.7193	1.6791	1.8350	57.0402	3.5141	0.4655	0.5087	0.9743
	0.5614	0.0170	0.0175	0.5444	0.0346	57.0402	1.7316	1.7825	55.3086	3.5141	0.4801	0.4942	0.9743
	0.5444	0.0176	0.0170	0.5268	0.0346	55.3086	1.7857	1.7284	53.5229	3.5141	0.4951	0.4792	0.9743
	0.5268	0.0181	0.0165	0.5087	0.0346	53.5229	1.8415	1.6726	51.6814	3.5141	0.5105	0.4637	0.9743
5	0.5779	0.0693	0.0691	0.5087	0.1383	58.7193	7.0378	7.0185	51.6814	14.0563	1.9512	1.9458	3.8970
	0.5087	0.0187	0.0159	0.4900	0.0346	51.6814	1.8990	1.6150	49.7824	3.5141	0.5265	0.4478	0.9743
	0.4900	0.0193	0.0153	0.4707	0.0346	49.7824	1.9584	1.5557	47.8240	3.5141	0.5429	0.4313	0.9743
	0.4707	0.0199	0.0147	0.4508	0.0346	47.8240	2.0196	1.4945	45.8045	3.5141	0.5599	0.4143	0.9743
	0.4508	0.0205	0.0141	0.4303	0.0346	45.8045	2.0827	1.4314	43.7218	3.5141	0.5774	0.3968	0.9743
6	0.5087	0.0783	0.0600	0.4303	0.1383	51.6814	7.9597	6.0966	43.7218	14.0563	2.2068	1.6903	3.8970
	0.4303	0.0211	0.0134	0.4092	0.0346	43.7218	2.1478	1.3663	41.5740	3.5141	0.5955	0.3788	0.9743
	0.4092	0.0218	0.0128	0.3874	0.0346	41.5740	2.2149	1.2992	39.3591	3.5141	0.6141	0.3602	0.9743
	0.3874	0.0225	0.0121	0.3649	0.0346	39.3591	2.2841	1.2300	37.0750	3.5141	0.6333	0.3410	0.9743
	0.3649	0.0232	0.0114	0.3417	0.0346	37.0750	2.3555	1.1586	34.7195	3.5141	0.6530	0.3212	0.9743
7	0.4303	0.0886	0.0497	0.3417	0.1383	43.7218	9.0022	5.0541	34.7195	14.0563	2.4958	1.4012	3.8970
	0.3417	0.0239	0.0107	0.3178	0.0346	34.7195	2.4291	1.0850	32.2904	3.5141	0.6735	0.3008	0.9743
	0.3178	0.0247	0.0099	0.2932	0.0346	32.2904	2.5050	1.0091	29.7855	3.5141	0.6945	0.2798	0.9743
	0.2932	0.0254	0.0092	0.2677	0.0346	29.7855	2.5833	0.9308	27.2022	3.5141	0.7162	0.2581	0.9743
	0.2677	0.0262	0.0084	0.2415	0.0346	27.2022	2.6640	0.8501	24.5382	3.5141	0.7386	0.2357	0.9743
8	0.3417	0.1002	0.0381	0.2415	0.1383	34.7195	10.1814	3.8749	24.5382	14.0563	2.8227	1.0743	3.8970
	0.2415	0.0270	0.0075	0.2145	0.0346	24.5382	2.7473	0.7668	21.7909	3.5141	0.7617	0.2126	0.9743
	0.2145	0.0279	0.0067	0.1866	0.0346	21.7909	2.8331	0.6810	18.9578	3.5141	0.7855	0.1888	0.9743
	0.1866	0.0288	0.0058	0.1578	0.0346	18.9578	2.9216	0.5924	16.0362	3.5141	0.8100	0.1642	0.9743
	0.1578	0.0297	0.0049	0.1282	0.0346	16.0362	3.0129	0.5011	13.0232	3.5141	0.8353	0.1389	0.9743
9	0.2415	0.1133	0.0250	0.1282	0.1383	24.5382	11.5150	2.5413	13.0232	14.0563	3.1925	0.7046	3.8970
	0.1282	0.0306	0.0040	0.0976	0.0346	13.0232	3.1071	0.4070	9.9161	3.5141	0.8614	0.1128	0.9743
	0.0976	0.0315	0.0030	0.0661	0.0346	9.9161	3.2042	0.3099	6.7119	3.5141	0.8883	0.0859	0.9743
	0.0661	0.0325	0.0021	0.0335	0.0346	6.7119	3.3043	0.2097	3.4076	3.5141	0.9161	0.0582	0.9743
	0.0335	0.0335	0.0010	0.0000	0.0346	3.4076	3.4076	0.1065	0.0000	3.5141	0.9447	0.0295	0.9743
10	0.1282	0.1282	0.0102	0.0000	0.1383	13.0232	13.0232	1.0331	0.0000	14.0563	3.6106	0.2864	3.8970

