National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No.NEPRA/R/TRF-464/GAEL-2019/24939-24941
November 21, 2019

Subject: **Decision of the Authority in the matter of Tariff Petition filed by Gul Ahmed Energy Limited for approval of Generation Tariff for RFO Based Power Plant of 136.17 MW (Gross) at Karachi for PPA Term Extension** [Case # NEPRA/TRF-464/GAEL-2019]

Dear Sir,

Please find enclosed herewith the subject Decision of the Authority (16 Pages) in Case No. NEPRA/TRF-464/GAEL-2019.

2. The Decision is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

3. The Order of the Authority's Decision shall be notified in the official Gazette.

Enclosure: As above

21.11.19
(Syed Safeer Hussain)

Secretary
Ministry of Energy (Power Division)
'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 TARIFF PETITION FILED BY GUL AHMED ENERGY LIMITED FOR APPROVAL OF GENERATION TARIFF FOR RFO BASED POWER PLANT OF 136.17 MW (GROSS) AT KARACHI FOR PPA TERM EXTENSION

1. INTRODUCTION

1.1. Gul Ahmed Energy Limited ("GAEL" or "the Petitioner"), filed a petition for determination of generation tariff for its 136.17 MW Gross RFO based Power project at Korangi Industrial township, Karachi, Sindh under the NEPRA Act and the rules and regulation made thereunder on February 14, 2019. The Petitioner requested for extension of its PPA with KE for further five years from 3rd November 2019 to 2nd November 2024.

1.2. According to the Petitioner, the project was undertaken and implemented pursuant to GoP's power policy 1994. The project achieved financial close on September 30, 1995, signed Power Purchase Agreement (PPA) on June 7, 1995 with K-Electric (KE) and subsequently achieved COD on November 02, 1997. According to the Petitioner the current term of the PPA, as set out therein in terms of its section 4.1(a), is twenty-two (22) years, unless terminated earlier (the Current PPA Term). According to the Petitioner, it has successfully operated its Facility for over twenty-one (21) years. In compliance with its PPA obligations, the Petitioner has generated approximately 790 GWH per annum of power, which has been supplied to KE to meet its consumer demand. The Petitioner and KE, in pursuance of their rights emanating from section 4.1(c) of the PPA, have been engaged in discussions for extending the term of the PPA for an additional period of five (5) years (the PPA Term Extension) which shall commence on November 3, 2019 (the Extension Commencement Date).

1.3. Salient feature of Petition are as under:

Description	**Tariff**
Energy Charge (Rs. /kWh):	
Fuel cost component	9.6506
Variable O&M (Local)	0.2497
Variable O&M (Foreign)	0.8491
Total	**10.7494**
Capacity Charge @ 100% PF (Rs. /kW/hour):	
Fixed O&M (Local)	0.3095
Fixed O&M (Foreign)	0.0574
Cost of working capital	0.1712
Insurance	0.0789
Return on Equity	0.6510
Total	**1.2680**
Total Tariff (Rs. /kWh)	**12.0174**
Total Tariff (US Cents/kWh)	**10.8853**

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ii. **Reference Fuel Price:** The Petitioner assumed (Ex-GST) RFO price of Rs. 42,282.71 per Ton (HHV), which include the transportation cost of fuel to site at Rs. 364.71.

iii. **Cost of working capital:** cost of working capital is assumed at PKR 2 billion (3-month KIBOR + 2% spread).

iv. **Insurance cost:** The petitioner annual insurance cover 0.7% of the EPC p.a. with assumption that NEPRA will allow indexation of this component to its actual cost paid.

v. **Return on Equity:** The return on Equity component of tariff has been calculated on the basis of 15% IRR on the equity of USD 43.513 million.

vi. **Exchange Rate:** Exchange Rate of Rs. 110.40/USD has been assumed.

vii. **Thermal Efficiency:** The petitioner assumed RFO based net complex efficiency of 38.3% (LHV) at 100% capacity factor (subject to part load adjustment and temperature de-rating curve).

viii. **Annual Availability**: The petitioner assumed annual plant availability is 91.7%.

ix. **Dependable Capacity:** net capacity of the plant is 127.50 MW.

x. **Tariff Period:** The petitioner proposed a tariff control period of 5 Years.

2. NOTICE OF ADMISSION

2.1. The Authority admitted the subject petition on 14th March 2019. Notice of Admission along with salient feature of Petition was made public on 19th April, 2019 inviting comments from stakeholders. Individual notices were also sent to stakeholders on 26th April 2019.

3. COMMENTS/ INTERVENTIONS

3.1. In response to the notice of admission, the following submitted its comments and intervention request:

K-Electric Consumers Forum (as Intervener)

i- Hearing should be held in Karachi

ii- The extensions shouldn't be given as

a) RFO fuel is dirtiest, its costlier than LNG/Gas which increase the circular debt and drains forex

b) NEW RFO is banned and its aux consumption and maintenance cost is high and is damaging to environment

c) Due to high tariff, it will be low on merit order so it's better to sell the power to industrial and commercial users by availing KE networks

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K-Electric (as Intervener)

i- KE intends to extend PPA with the Petitioner for 5 years and support GAEL's request in this regard.

ii- KE should be made a party to the proceeding to participate as intervener.

CPPA-G (Commentator)

i- The plant doesn't fall under the purview of CPPA-G however, NEPRA should make assessment of the plant for remaining useful life keeping in view the efficiency of the plant in comparison to others.

Ministry of Planning, Development & Reform Energy Wing (Commentator)

i- The PPA should be on Take and Pay basis with no capacity charges.

ii- Plant condition should be verified by independent consultant.

iii- Fresh EIA should be conducted by SEPA

iv- O&M cost should be on actual basis

v- Thermal efficiency claimed by Petitioner as 40.04% should be assessed through independent consultant

vi- KE should reduce their dependence on expensive power plants and also consider purchasing additional power from NTDC at cheaper rates.

vii- No tax exemption of any kind should be allowed.

viii- ROE shouldn't be indexed with US$

ix- Only those assumption should be approved in the PPA which has a NEPRA prior approval.

Syed Akhter Ali (Commentator)

i- In view of the mounting capacity charges and excess capacity, extension shouldn't be allowed. But taking a longer view, this capacity should be treated as a backup/insurance policy against possible discontinuities in power supplies and investments and delays in project implementation.

ii- Status of Furnace Oil production and plans and policy is this respect may be found out from the competent authority.

iii- Average load factors should be considered for assuming capacity factors. NTDC may be asked to project the expected capacity utilization of the proposed PPA and Merit order, if such a plant is inducted.

iv- The plant may be allowed a two-part supply contract; one fixed and the other variable wherein 50 % or less or more may be under Take or Pay and the rest as variable under Take and Pay. The second option is take and pay approach.

v- The other option is to have a pure Take and Pay approach

vi- NTDC and other federal institutions take the PPA decisions in a combined merit order regime for the purpose of additional capacities such as retiring power plants.

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4. ISSUES FRAMED

4.1. On the basis of contents of tariff petitions and comments received so far, following issues were framed for hearing:

i. Whether the Petitioner's PPA with KE should be extended?

If yes,

ii. Whether it should be extended for 5 years from 3rd November 2019 to 2nd November 2024, or otherwise?

iii. Whether the request to allow tariff on Take or Pay basis is justified?

iv. Whether the requested RFO based thermal efficiency of 38.3% (LHV) at 100% capacity factor is justified?

v. Whether the total claimed O&M cost is justified?

vi. Whether the cost of working capital requested at PKR 2 billion (3-month KIBOR + 2% spread) is justified?

vii. Whether the annual insurance cost requested to be 0.7% of the EPC p.a. is justified?

viii. Whether the return on equity of 15% (US dollar based) is justified?

ix. Whether annual availability requested at 91.7% is justified?

x. Whether net capacity assumed at 127.50 MW is justified?

xi. Whether all environmental approvals including EIA have been obtained from the competent authority for the period in which the extension has been sought by the Petitioner?

5. HEARING

5.1. In order to provide an opportunity for the stakeholders to comment on the issued framed, the Authority also decided to hold a hearing on June 17, 2019 at Marriot Hotel Karachi at 1100 hrs. However, the hearing was rescheduled to June 18, 2019 and accordingly stakeholders were informed through written notices and also through advertisement in the national newspapers.

5.2. The Hearing was held as per schedule through video link and was participated by the representatives from Petitioner, KE, commentators and other stakeholders.

6. CONSIDERATION OF THE VIEWS OF THE STAKEHOLDERS, ANALYSIS, FINDINGS AND DECISIONS ON IMPORTANT ISSUES

6.1. The issue wise discussion, submissions of the Petitioner and stakeholders, analysis, findings and recommendations are provided in the succeeding paragraphs.

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7. Whether the Petitioner's PPA with KE should be extended? If yes;

Whether it should be extended for 5 years from 3rd November 2019 to 2nd November 2024, or otherwise?

7.1. During the hearing all the stakeholders except KE opposed the requested extension in the PPA of Gul Ahmed Energy on the ground that plant is low in efficiency and producing costly energy. The stakeholders submitted that many new efficient plants have been added in the national grid which are currently underutilized, therefore, in the overall interest of the country, the equivalent power of 127.5MW can easily be provided to KE by national grid. KE in its intervention request and comments in the hearing submitted that KE intends to extend PPA with the Petitioner for 5 years and support GAEL's requested extension of the PPA keeping in view the current energy shortfall in KE system and to cater future growth in the power demand.

7.2. The Authority vide its letter No. NEPRA/SAT-II/TRF-460/TEPL-2018/18005 dated 30th September 2019 directed CPPA-G to submit its analysis and recommendations on the additional supply of power to K-Electric to replace power supply by Gul Ahmed Energy Limited. Further, the Authority vide its letter No. NEPRA/SAT-II/TRF-450/NTDC-2018/18593 dated 4th October 2019 also directed NTDC to provide information whether equivalent power can be made available to KE from national grid to replace the power supplied by GAEL without any transmission constraints and in case NTDC system allows uninterrupted transmission of additional power, how much time will it take to make necessary arrangements.

7.3. NTDC vide its letter No. GMT/NTDC/T-90/1875-78 dated 01-11-2019 informed that the existing NTDC and K-Electric 220 kV transmission interface cannot support 250 MW export in addition to the existing 650 MW export to K-Electric in a reliable manner, especially, under N-1 contingency conditions. NTDC further submitted that in the current scenario to cater the demand and maintain the smooth running of system, K-Electric may operate the two IPPs (Tapal and Gul Ahmad) as Marchant IPPs on Take & Pay basis for 2-3 years till the upgradation of K-Electric network, to take additional power through existing NTDC – K-Electric system interface.

7.4. Keeping in view the electricity shortfall in KE system and reply of NTDC, the Authority has decided to allow extension of the PPA for three (3) years or till the time CPPA-G/NTDC are willing and capable of supplying equivalent additional power to KE, whichever comes earlier with the direction to upgrade its system as suggested by NTDC as early as possible to take additional power from NTDC/CPPA-G.

8. Whether the request to allow tariff on Take or Pay basis is justified?

8.1. Under the expired PPA regime, the plant was operated on the basis of availability under take or pay mode of payment. The capacity charges (fixed cost) were paid irrespective of actual plant operation on the basis of availability of the plant and 100% fixed costs were paid on achieving the agreed availability. Under take and pay method of payment, fixed costs will also

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be paid along with variable cost on the basis of actual dispatch of the plant. In case of FFBL coal power plant which is also supplying electricity to KE, tariff was worked out on take and pay basis.

8.2. Ministry of Planning, Development & Reform (Energy Wing) in its comments submitted that the PPA should be on Take and Pay basis with no capacity charges. CPPA-G in a similar case of Tapal Energy also suggested to allow to procure power on take and pay basis and shall be dispatched on the basis of KE's merit order without any sovereign guarantees commitment by GoP. GAEL vide its letter No. F-NEPRA-L19-00140 dated 2nd October 2019 agreed take & pay tariff with the request that KE be directed to make minimum of 60% dispatch so that the company is able to meet its fixed costs.

8.3. Having considered the comments and arguments put forward, the Authority feels that GAEL should be given the flexibility to sell its energy to the bulk power consumers in addition to KE. This will help in introducing competition in the market. In view thereof, the Authority has decided to allow KE procurement of power from GAEL under take and pay arrangement.

9. Whether the requested RFO based thermal efficiency of 38.3% (LHV) at 100% capacity factor is justified?

9.1. According to the Petitioner, after factoring the impact of fuel cleaning, average plant aging, and variation in plant load factor, 38.3% net complex efficiency (LHV) at mean site conditions, at 100% Load Factor, running on RFO, is guaranteed. In Para 8.2.1 of the Petition, the Petitioner submitted that the LHV efficiency of 38.3% at 100% load shall be subject to part load adjustment and temperature de-rating curve which is contradictory to the foregoing submission. The Petitioner requested fuel cost component (FCC) of Rs. 9.6506/kWh on the basis of Ex-GST HHV RFO price of Rs. 42,282.71/ton including transportation, LHV heat rates of 8,779.7 and LHV calorific value of 9,700 kcal/Kg. According to the Petitioner, the FCC shall be adjusted on account of fuel price variation of fuel consumed using FIFO method.

9.2. The submissions of the petitioner have been carefully evaluated. The Petitioner was asked to provide actual fuel consumption, calorific value and actual units delivered to KE. On the basis of the information submitted by the Petitioner, analysis shows following actual efficiencies for the last five years:

Particulars	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	Average
Furnace Oil Consumed (tons)	126,747	155,709	148,858	169,538	152,088	150,588
Avg. CV of RFO (Btu/lb.)	17,568	17,508	17,603	17,641	17,728	17,611
Avg. CV of RFO (Btu/kg.)	38,730.80	38,598.52	38,807.96	38,891.74	39,083.54	38,826.19
Export (GWh)	582.41	718.36	687.88	788.48	712.71	697.97
Heat Rate LHV (Btu/kWh)	8,428.79	8,366.47	8,398.09	8,362.45	8,340.19	8,376.83
Efficiency LHV (%)	40.4821%	40.7836%	40.6301%	40.8032%	40.9121%	40.7332%

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9.3. The analysis revealed that during the last five years TEPL's actual efficiency remained 40.7332% which includes part load adjustment, degradation due to aging and temperature. The Authority has accordingly decided to adopt the same. The Authority has also decided to adopt LHV calorific value of 38,826.19 Btu/Kg. for determination of fuel cost component.

9.4. On the basis of RFO price of Rs. 62,586.93/ton including transportation, net LHV heat rate of 8,376.83 Btu/kWh and LHV calorific value of 38,826.19 Btu/Kg., the Authority has assessed reference fuel cost component as Rs. 13.5033/kWh. The reference fuel cost component shall be subject to adjustment for variation in actual furnace oil price and actual LHV calorific value as per the stipulated mechanism. Minimum LHV calorific value shall be 17,333 Btu/lb. and no adjustment shall be allowed below 17,333 Btu/lb.

10. Whether total claimed O&M cost is justified?

10.1. The Petitioner requested variable O&M cost component of Rs. 1.0988/kWh comprising foreign component of Rs. 0.8491/kWh and local component of Rs. 0.2497/kWh. The Petitioner also requested fixed O&M cost component of Rs. 0.3669/kW/h comprising local component of Rs. 0.3095/kW/h and foreign component of Rs. 0.0574/kW/h.

Fixed O&M:

The Petitioner's requested fixed O&M cost is based on the estimated annual fixed O&M expense of Rs. 409.79 million. The Petitioner was asked to provide the breakup of the actual fixed O&M cost for the last five years. The Petitioner provided the following breakup of the actual fixed O&M cost along with the breakup of the requested fixed O&M cost:

Particulars	FY-2014	FY-2015	FY-2016	FY-2017	FY-2018	Requested
	Rs. in 000					
Salaries, allowances and benefits	176,344	204,880	215,433	231,950	242,031	264,796
Rates & Taxes	921	611	1,056	586	740	800
Utilities	10,353	12,820	17,658	10,900	15,973	17,798
Vehicle running expense	19,554	17,566	16,834	16,375	15,687	17,285
Postage, telephone and fax	1,927	1,592	1,502	1,434	1,462	1,702
Security expense	1,572	1,305	1,757	1,480	1,807	2,136
Cleaning charges	2,830	3,338	4,016	3,897	4,844	5,425
Rent	8,940	7,533	8,260	9,670	10,438	15,000
Repairs and maintenance	1,270	2,670	2,775	2,643	2,710	2,981
Travelling and conveyance	489	323	5,421	1,820	4,911	5,893
Entertainment	156	156	301	303	386	463
Printing and stationary	1,132	1,142	1,438	1,157	862	1,034
Legal and professional	361	3,609	2,542	1,625	2,997	3,596
Consultancy Charges	463	1,085	2,131	1,274	1,685	1,887
Fees and subscription	1,905	2,992	5,924	3,783	2,174	2,435

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Auditors' remuneration	1,033	1,118	1,150	1,299	1,425	1,450
Others	740	565	2,169	1,105	903	1,000
Total	**229,990**	**263,305**	**290,367**	**291,301**	**311,035**	**345,681**
Cost of annual maintenance of various equipment including switchyard, main transformer, MV breaker, purifier & boiler etc.	-	-	-	-	-	64,110
Grand Total	**229,990**	**263,305**	**290,367**	**291,301**	**311,035**	**409,791**

10.2. The requested cost of Rs. 409.79 million is substantially higher than the average fixed O&M cost for the last five years. The primary reason for the higher fixed O&M cost is the cost of annual maintenance of various equipment including switchyard, main transformer, MV breaker, purifier & boiler lower etc. of Rs. 64.11 million which was not allocated to the fixed O&M of the previous years and is part of the variable O&M. Apart from the maintenance cost of Rs. 64.11 million, the remaining fixed O&M Cost of Rs. 345.681 million requested by the Petitioner is 11% higher than the actual fixed O&M cost of FY 2017-18. Keeping in view the inflation rate, the Authority considers that the requested fixed O&M cost of Rs. 345.681 million is reasonable and approved as such which translates into Rs. 0.3364/kWh. The fixed O&M cost component shall be adjusted quarterly on the basis of average local CPI for the last quarter. The requested maintenance cost shall be considered while assessing the variable O&M cost.

Variable O&M:

10.3. According to the Petitioner, foreign variable O&M component primarily includes imported spare parts to be replaced on normal scheduled maintenance and unscheduled maintenance. It also includes specialized technical services from manufacturer during maintenance of the Facility. The generation sets, and associated equipment require overhauling as per manufacturer's recommended schedules, which are based on actual running hours. The actual timing of the major overhauls depends on dispatch of the Facility. The Petitioner also requested indexation of foreign variable O&M component with US CPI and exchange rate.

10.4. According to the Petitioner, local variable component includes the cost of lubricant and chemical consumed on generation of power and are directly related to the electricity actually generated. The rate will be indexed to the prevailing CPI of Pakistan. According to the Petitioner, GST charged at prevailing rates on this local and foreign components shall be pass-through at actuals and is to be claimed through separate monthly Supplemental Invoice.

10.5. The Petitioner's requested variable O&M cost component of Rs. 1.0988/kWh seems substantially on the higher side keeping in view the actual variable O&M of the similar power plants. The Petitioner was asked to provide the breakup of the actual variable O&M cost for the last five years. The Petitioner provided the following breakup of the actual variable O&M cost:

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Particulars	FY-2014	FY-2015	FY-2016	FY-2017	FY-2018
	Rs. in 000				
Operations and maintenance cost	566,878	694,153	608,033	777,138	734,717
Lubricants	106,654	137,871	131,264	115,634	135,150
Stores and spares consumed	9,628	12,159	9,404	6,695	8,367
Repairs and maintenance	1,050	280	714	1,419	1,503
Capital Expenditure	48,956	28,041	340,518	33,722	130,027
Total	**733,166**	**872,504**	**1,089,933**	**934,608**	**1,009,764**
	Rs./kWh				
Operations and maintenance cost	0.97	0.97	0.88	0.99	1.03
Lubricants	0.18	0.19	0.19	0.15	0.19
Stores and spares consumed	0.02	0.02	0.01	0.01	0.01
Repairs and maintenance	0.00	0.00	0.00	0.00	0.00
Capital Expenditure	0.08	0.04	0.50	0.04	0.18
Total	**1.26**	**1.21**	**1.58**	**1.19**	**1.42**

10.6. In response to a query regarding very high O&M cost, GAEL vide its email dated 30-10-2019 submitted following reasons:

i. Tapal has in-house O&M function whereas, GAEL had outsourced to O&M.

ii. GAEL has a policy of using foreign replacement parts which generally cost more & also foreign exchange rate dependent.

iii. Maintenance strategy employed by GAEL is "Reliability enhancement" which involves replacements rather than repair. A large number of components were replaced during last 5 years including turbocharger, main transformers, radiators etc

iv. Load variation by system is one of the key factor for additional O&M cost. More than 3000 start/stops in a year contribute towards intensive maintenance.

v. We provide stability to system. System voltage variation needs to be adjusted more frequently by our tap changing operation which impacts life of OLTC. More than a millions tap changing operations are already recorded.

vi. Tapal is not comparable with GAEL. Tapal has 30% more redundancy [12 DG units] as compared to GAEL [9 DG units] hence not comparable to GAEL. Furthermore, maintenance requirements of GAEL's engine [18V46] is quite different from Tapal's engine [18V38]. Plant design including stack, turbocharger etc is also not similar.

vii. It is evident from GAEL's actual O&M cost that GAEL is spending more money on maintenance & in fact reduced its profit to bring reliability to system.

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10.7. The average variable O&M cost over the last five years in the instant case is Rs. 1.33/kWh which is even higher than the requested variable O&M cost. One of the reason for the higher variable O&M may be that the plant was being operated and maintained under the O&M Agreement with Wartsilla. GAEL has to make payment to Wartsilla under the terms of the O&M Agreement irrespective of the actual O&M by Wartsilla. Since the Agreement with Wartsilla has completed in January 2019, now GAEL is operating and maintaining the plant itself.

10.8. An analysis of the existing power plants with similar engine technology of Wartsilla 18 V 46 established under Power Policy 2002 shows total average actual O&M cost of Rs. 1.01/kwh (fixed & variable) including all maintenances. The actual cost includes parts, lubricants, stores & spares, capital spares, salaries & wages and all other administrative expenses The Authority considers that the actual operational information of the similar power plants is a reasonable basis to assess O&M cost in the instant case. Accordingly, the Authority has assessed variable O&M cost of Rs. 0.6736/kWh (Rs. 1.01/kWh - Rs. 0.3364/kWh) and the same is being approved.

11. Whether the cost of working capital requested at PKR 2 billion (3-month KIBOR + 2% spread) is justified?

11.1. The Petitioner requested cost of working capital component of Rs. 0.1712/kW/h on the basis of working capital requirement of Rs. 2 billion to finance 30 days fuel inventory at 100% load, 30 days receivables along with GST and average of 30 days fuel requirement for operation prior to billing. The Petitioner requested cost of working capital at 3 month KIBOR 6.37% plus a premium of 2%. The Petitioner further requested adjustment of cost of working capital for variation in average fuel price during the quarter and the quarterly change in the 3 month KIBOR.

11.2. Cost of working capital to finance fuel inventory and fuel receivables is an integral operating cost of all power plants on liquid fuels. Cost of working capital has been allowed to all the RFO based power plants established under the 2002 Power Policy. Accordingly, working capital requirement of Rs. 1.45 billion has been worked out on the basis of RFO price of Rs. 62,586.93/ton, 15 days fuel inventory at full load, 25 days receivables at 60% load and 17% sales tax. Approximately 15 days credit is provided by the fuel supplier in the market which shall offset the cost of average 15 days fuel requirement for operation prior to billing. Accordingly, on the basis of 3 month KIBOR of 12.97% and premium of 2%, the cost of working capital component works out Rs. 0.2113/kWh and the same is being approved. The cost of working capital shall be subject to adjustment due to variation in average price of fuel inventory and latest available KIBOR.

12. Whether the annual insurance cost requested to be 0.7% of the EPC p.a. is justified?

12.1. The Petitioner requested insurance cost component of Rs. 0.0789/kW/h. According to the Petitioner, the Insurance cost component consists of the customary industry vide covers taken for all risk insurance/reinsurance for the Project, as well as for business interruption insurance amounting to 0.7% of the EPC cost. The Petitioner further submitted that the project is currently covered by insurance policies from Adamjee Insurance Company Limited being reinsured with reputed A+ rated international underwriters.

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12.2. The Petitioner did not provide the reference insurance premium, EPC cost or calculation of insurance cost component in the Petition. The Petitioner vide email dated 30-12-2019 provided the calculation of the insurance cost component which is based on insurance premium of Rs. 88.12 million (US$ 798,219). According to the audited financial results for FY 2017-18, actual insurance cost incurred was Rs. 57.81 million. The requested insurance cost seems substantially on the higher side, therefore, the Authority has decided to adopt Rs. 57.81 million as insurance premium for calculation of reference insurance component. Accordingly, the insurance cost component works out Rs. 0.0563/kWh and the same is being approved. The reference insurance cost component shall be adjusted annually on the basis of actual insurance premium subject to maximum of US$ 798,219 (0.7% of EPC cost) at prevailing exchange rate of Rs./US$ of the first day of each year of the extended term of the PPA.

13. Whether the return on equity of 15% (US dollar based) is justified?

13.1. The Petitioner requested return on equity (ROE) component of Rs. 0.6510/kW/h at 15% on the equity investment of US$ 43.513 million. According to the Petitioner, the Project was set up on Build Own Operate (BOO) basis and equity has not been redeemed to date. In addition, the Petitioner also requested to consider the rationale for the ROE on the basis that the Petitioner (including the Project sponsors) will be bearing additional risks and exposure during the PPA Term Extension due to unavailability of the risk coverage previously provided by the Implementation Agreement and the Government of Pakistan Sovereign Guarantee. The Petitioner also submitted that requested 15% ROE is a compromise from 17% previously obtained under the existing tariff regime. The Petitioner further submitted that the Authority allows (and has allowed) 15% IRR to thermal IPPs supplying dedicated power to utilities over their entire project life varying between 20, 25 or 30 years, therefore, allowing similar IRR for the PPA Term Extension to the Petitioner will be consistent with the Authority's own determinations and established policy. GAEL vide its letter No. F-NEPRA-L19-00140 dated 2nd October 2019 agreed to reduce ROE from 15% to 12% subject to exchange rate adjustment.

13.2. The submissions of the Petitioner have been evaluated carefully. The Authority has already reduced the dollar based return to new projects which have greater risks to 14% and even less than 14%. The Authority considers that the associated risks in the instant case have reduced because plant has completed its agreed PPA life. Therefore, it finds no justification for allowing higher return. In view thereof, the Authority feels that in the instant case 12% return on equity can be considered a fair assessment, accordingly it has decided to allow the same. According to the Financial Statements for FY 2017-18, the details of shareholders' equity is as under:

Particulars	Rs. Million
Paid up Share Capital	1,683.284
Capital Reserve	96.846
Accumulated Profit	6,422.741
Total Shareholders' Equity	**8,202.871**

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13.3. The Petitioner has calculated requested ROE component on the basis of equity of Rs. 4,803.84 million (US$ 43.513 million at Rs. 110.4/US$). Accordingly on the basis of ROE of 12% and shareholders' equity of Rs. 4,803.84 million, the annual ROE works out Rs. 576.46 million and the ROE component works out Rs. 0.5610/kWh and the same is being approved. No indexation shall be applicable on ROE component of tariff.

13.4. The Authority has further decided to incorporate a claw back mechanism in case the regulated return increases over 12% due to saving in other tariff components against the reference equity of Rs. 4,803.84 million as per the following mechanism:

Percentage of ROE	Sharing	
	IPP	**Consumer**
Upto 12% of Reference Equity	100%	-
> 12% but ≤ 15% of Reference Equity	50%	50%
> 15% of Reference Equity	25%	75%

14. Whether annual availability requested at 91.7% is justified?

14.1. The Petitioner assumed annual availability of 91.7% (335 complex days), however, in the power sale proposal to KE, the Petitioner proposed annual availability of 92% which is comparatively higher than the availability being offered by the similar technology. The proposed availability being reasonable, is accepted as such.

15. Whether net capacity assumed at 127.50 MW is justified?

15.1. The Petitioner proposed net power output of 127.50 MW at reference site conditions after auxiliary consumption which seems reasonable and the same is being approved.

16. Whether all environmental approvals including EIA have been obtained from the competent authority for the period in which the extension has been sought by the Petitioner?

16.1. According to the Petitioner, EIA approval is being obtained on annual basis. The Petitioner vide email dated 30th October 2019 submitted the environmental approval dated 18th September 2018 from Sindh Environmental Protection Agency valid up to 31-12-2019.

16.2. The submissions or the Petitioner are reasonable and accepted as such.

17. <u>Summary of Tariff</u>

17.1. The summary of the approved tariff is provided hereunder:

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Description	Rs./kWh
Energy Charge:	
Fuel cost component	13.5033
Variable O&M (Local)	0.6736
Sub-Total	**14.1769**
Capacity Charge:	
Fixed O&M (Local)	0.3364
Cost of working capital	0.2113
Insurance	0.0563
Return on Equity	0.5610
Sub-Total	**1.1650**
Total Tariff	**15.3419**
Reference Values:	
RFO Price (Rs./ton)	62,586.93
KIBOR	12.97%
CPI General June 2019	246.82

18. ORDER

I. The Authority hereby determines and approves the following generation tariff for Gul Ahmed Energy Limited for its RFO based power plant of 127.5 MW net along with adjustments/indexations for delivery of electricity to the power purchaser on take and pay basis:

Description	Rs./kWh	
Energy Charge:		
Fuel cost component	13.5033	Fuel Price
Variable O&M (Local)	0.6736	CPI (General)
Sub-Total	**14.1769**	
Capacity Charge:		
Fixed O&M (Local)	0.3364	CPI (General)
Cost of working capital	0.2113	KIBOR and Fuel Price
Insurance	0.0563	Actual subject to maximum limit
Return on Equity	0.5610	-
Sub-Total	**1.1650**	
Total Tariff	**15.3419**	
Reference Values:		
RFO Price (Rs./ton)	62,586.93	
KIBOR	12.97%	
CPI General June 2019	246.82	

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II. Adjustments/Indexations

The following adjustments/ indexations shall be applicable to the reference tariff;

i) Adjustment in Insurance as per actual

The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser shall be treated as pass-through. Insurance component of reference tariff shall be adjusted annually as per actual upon production of authentic documentary evidence according to the following formula:

AIC	=	$Ins_{(Ref)} / P_{(Ref)} * P_{(Act)}$
Where		
AIC	=	Adjusted Insurance Component of Tariff
$Ins_{(Ref)}$	=	Reference Insurance Component of Tariff
$P_{(Ref)}$	=	Reference Premium Rs. 57.81 million
$P_{(Act)}$	=	Actual Premium or US$ 798,219 at exchange rate prevailing on the 1st day of the insurance coverage period whichever is lower

ii) Indexation applicable to O&M

O&M components of tariff shall be adjusted on account of local Inflation (CPI) quarterly on 1st July, 1st October, 1st January and 1st April based on the average CPI for the last quarter as per the following mechanism:

$V.\ O\&M_{(REV)}$	=	$V.\ O\&M_{(REF)} * CPI_{(REV)} / CPI_{(REF)}$
$F.\ O\&M_{(REV)}$	=	$F.\ O\&M_{(REF)} * CPI_{(REV)} / CPI_{(REF)}$
Where:		
$V.\ O\&M_{(REV)}$	=	The revised Variable O&M Component of Tariff
$F.\ O\&M_{(REV)}$	=	The revised Fixed O&M Component of Tariff
$V.\ O\&M_{(REF)}$	=	The reference Variable O&M Component of Tariff
$F.\ O\&M_{(REF)}$	=	The reference Fixed O&M Component of Tariff
$CPI_{(REV)}$	=	The revised CPI (General)
$CPI_{(REF)}$	=	The reference CPI (General) of 246.82 for June 219

iii) Cost of Working Capital

Cost of working capital shall be adjusted quarterly for variation in KIBOR and fuel price as per the following mechanism:

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$COWC_{(Rev)}$	=	$COWC_{(Ref)} \times P_{(Rev)} / P_{(Ref)} \times I_{(Rev)} / I_{(Ref)}$
Where:		
$COWC_{(Rev)}$	=	Revised cost of working capital component.
$COWC_{(Ref)}$	=	Reference cost of working capital component.
$P_{(Rev)}$	=	Revised Ex-GST delivered RFO price per ton.
$P_{(Ref)}$	=	Reference Ex-GST delivered RFO price of Rs. 62,586.93/ton.
$I_{(Ref)}$	=	Reference interest rate of 12.97% KIBOR plus 2% premium.
$I_{(Rev)}$	=	Revised interest rate of KIBOR plus 2% premium.

iv) **Fuel Price Adjustment**

The fuel cost component of tariff shall be adjusted on account of fuel price variation as per the following mechanism:

$FCC_{(Rev)}$	=	$FCC_{(Ref)} \times P_{(Rev)} / P_{(Ref)} \times CV_{(Ref)} / CV_{(Rev)}$
Where:		
$FCC_{(Rev)}$	=	Revised Fuel cost component.
$FCC_{(Ref)}$	=	Reference Fuel cost component.
$P_{(Rev)}$	=	Revised Ex-GST delivered RFO price per ton.
$P_{(Ref)}$	=	Reference Ex-GST delivered RFO price of Rs. 62,586.93/ton.
$CV_{(Ref)}$	=	Reference LHV calorific value of 38,826.19 BTUs/lb.
$CV_{(Rev)}$	=	Revised LHV actual calorific value subject to minimum of 17,333 BTUs/lb.

III. <u>Terms & Conditions</u>

The following terms and conditions shall apply to the determined tariff:

i. The approved tariff shall be applicable w.e.f. 3rd November 2019 for a term of three years or till the time CPPA-G/NTDC are willing and capable of supplying equivalent additional power to KE, whichever comes earlier.

ii. The discontinuation of the purchase of power during the extended term of the PPA shall be subject to reasonable notice period which shall be incorporated in the PPA.

iii. Dispatch shall be in accordance with the merit order as defined in the grid code.

iv. No bonus payments shall be allowed over and above the approved tariff.

v. WWF and WPPF shall be pass-through items.

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vi. Taxes on income, if any, shall be pass-through.

vii. In case the regulated return increases over 12% due to saving in other tariff components, the gain shall be shared as per the following mechanism:

Percentage of ROE	Sharing	
	IPP	Consumer
Upto 12% of Reference Equity	100%	-
> 12% but ≤ 15% of Reference Equity	50%	50%
> 15% of Reference Equity	25%	75%

viii. All adjustments/indexations i.e. fuel price, CPI, KIBOR and insurance shall be done by KE in accordance with the stipulated mechanism.

IV Notification

The above Order of the Authority shall be notified in the Official Gazette in terms of Section 31(7) of the Regulations of Generation, Transmission and Distribution of Electric Power Act, 1997.

AUTHORITY

Saif Ullah Chattha
Member 18.11.2019

Rehmatullah Baloch
Member 18/11/19

Rafique Ahmed Shaikh
Member 19/11/19

Engr. Bahadur Shah
Member

Tauseef H. Farooqi
Chairman

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