



National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/TRF-304/NPGCL-2015/16064-16066
October 19, 2018

Subject: Decision of the Authority in the matter of Request filed by NPGCL for Modification in the Existing Mechanism of Fuel Cost Component on account of Utilization of Re-Gasified Liquefied Natural Gas (RLNG) (Case No. NEPRA/TRF-304/NPGCL-2015)

Dear Sir,

Please find enclosed herewith the subject decision of the Authority (06 pages) in the matter of Request filed by NPGCL for Modification in the Existing Mechanism of Fuel Cost Component on account of Utilization of Re-Gasified Liquefied Natural Gas (RLNG) in Case No. NEPRA/TRF-304/NPGCL-2015.

2. The decision is being intimated to the Federal Government for the purpose of notification of adjustment in the approved tariff through 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 is to be notified in the official Gazette.

Enclosure: As above

(Syed Safer Hussain)

Secretary,
Ministry of Energy,
'A' Block, Pak Secretariat
Government of Pakistan
Islamabad.

CC:

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



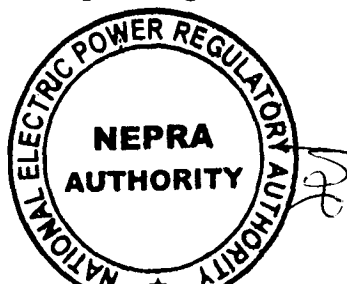
**DECISION IN THE MATTER OF REQUEST FILED BY NPGCL FOR MODIFICATION IN
THE EXISTING MECHANISM OF FUEL COST COMPONENT ON ACCOUNT OF
UTILIZATION OF RE-GASIFIED LIQUEFIED NATURAL GAS (RLNG)**

1. INTRODUCTION

- 1.1. Northern Power Generation Company Limited (hereinafter referred as "NPGCL") vide letter dated 7th March 2018, requested for the change in fuel price adjustment mechanism for utilization of RLNG due to shortage of gas and cut in the supply of RFO. NPGCL requested following fuel cost components for operation of plants on RLNG on the basis of already approved heat rates:

Name of Power Station	Block	Unit	Net Heat Rate approved by NEPRA (Btu/kWh)	Requested FCC on RLNG (Rs. kWh)
TPS Muzaffargarh	1	1	10,517	13.4726
		2	10,660	13.6552
		3	10,291	13.1830
	2	4	10,276	13.1633
	3	5	10,942	14.0162
		6	11,241	14.3996
GTPS Faisalabad	4	5 – 9	8,593	10.4846
		5 – 8	15,365	18.7464
SPS Faisalabad	5	1 – 2	14,367	17.5278
GTPS Faisalabad	6	1 – 4	15,365	18.7464
RLNG Price of Rs. 1,156.56 (USD 10.5142/MMBTU at exchange rate of Rs. 110/USD)				

- 1.2. NPGCL vide above referred letter also requested the immediate application of RLNG as alternate fuel in accordance with Clause 4 (7) of NEPRA (Tariff Standards and Procedures) Rules, 1998.
- 1.3. The Authority considered the above referred request on 20th March 2018 and accepted the application filed by NPGCL and decided to initiate proceedings to modify the existing mechanism of fuel cost component on account of Re-Gasified Liquefied Natural Gas (RLNG).
- 1.4. NPGCL vide letter dated 9th April 2018 again requested to expedite the matter for immediate application of RLNG as alternate fuel keeping in view the non-availability of Gas and RFO, upcoming of summer season and increase in demand of electricity.





1.5. The Authority considered NPGCL's request of immediate application of RLNG as alternate fuel under Rule 4(7) of NEPRA (Tariff Standards and Procedures) Rules, 1998 and decided to grant immediate application of RLNG as alternate fuel in line with the permission granted to IPPs earlier. Accordingly, decision in the matter was issued on April 12, 2018, which was subject to the following conditions:

- i) Dispatch shall be strictly in accordance with the economic merit order.
- ii) Operation on simple cycle shall not be allowed.

2. PROCEEDINGS

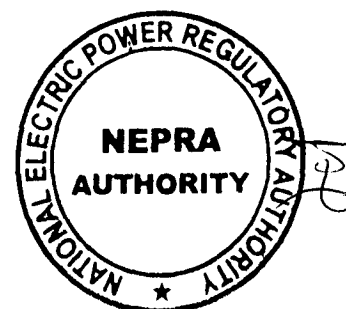
2.1. The Authority decided to hold a hearing in the matter on April 17, 2018. Accordingly, the notice of hearing was published in the newspapers on April 10, 2018. Stakeholders were invited to participate in the proceedings through filing comments/intervention requests. Individual notices were also sent to important stakeholders on April 10, 2018 inviting comments/ intervention requests to assist the Authority in arriving at a just and an informed decision. No comments or interventions requests were received. Hearing in the matter was held as per schedule and was participated by the representatives of NPGCL and JPCL.

2.2. In order to proceed further with the case, NPGCL was directed vide letter dated April 30, 2018 to provide following information:

- i) Gas supply agreement (GSA) or any other interim arrangement with SSGC / SNGPL which includes specifications of delivered RLNG like pressure, allocated quota and duration of agreement etc;
- ii) Impact on operational parameters of the power plants including net capacity, auxiliary consumption and net thermal efficiency owing to utilization of RLNG instead of RFO;
- iii) Impact on annual availability along with outages, O&M expenses (fixed and variable), annual plant capacity factor and frequent start/stops etc owing to utilization of RLNG instead of RFO;
- iv) Steps taken by NPGCL and NPGCL for modification in the existing generation licenses and Power Purchase Agreements (PPA's).

2.3. NPGCL did not submit reply to the above information direction. In the absence of a response from NPGCL. The Authority considered the submissions made by JPCL vide letter No. CEO/JPCL/TD/34423-24 dated 21st October 2013 on the issue of utilization of gas instead of RFO as relevant in the instant case also to arrive at an informed decision.

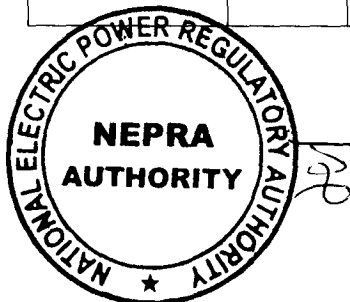
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- 2.4. It was also noted that the approved heat rates and dependable capacity in respect of TPS Muzaffargarh (on both fuels i.e., RFO/ Gas) were based on the test results conducted by Independent Engineer on RFO. These were approved by the Authority owing to the fact that the plants would mostly be operated on RFO fuel due to scarcity of indigenous natural gas. Since the instant request of NPGCL pertains to allowing utilization of firm quantity of RLNG as primary fuel instead of RFO, therefore, apart from GTPS Faisalabad units 5 – 8, the Authority has decided to separately determine heat rates and net capacity for operation on Gas/RLNG. For GTPS Faisalabad units 5 – 8, the Authority has decided that there shall be no change in its operational parameters as it is already being operated on Gas. After de-commissioning of SPS Faisalabad Units 1-2, and GTPS Faisalabad Units 1-4, fuel cost components for these units are not required.
- 2.5. The Authority noted that gas fired thermal power plants require less auxiliary power as compared to RFO based operations. This is also evident from Authority's earlier decisions in the matter of RFO fired steam turbine based power plants including Pakgen, Lalpir, BQPS-I and HUBCO, wherein the Authority allowed auxiliary consumption within the range of 7% – 8% of gross capacity at RSC. However, in the case of gas fired combine cycle power plants, the Authority allowed auxiliary consumption within the range of 2% – 3% of gross capacity at RSC. JPCL in its 2013 response on the issue of utilization of gas instead of RFO submitted that the output can be increased up to 5 MW on each unit if it was allowed to generate electricity on gas. Therefore, in the instant case, based on JPCL's 2013 response in the matter, the Authority has decided to approve 5MW increase in the net capacity for each of the units 1 – 6 of TPS Muzaffargarh for operation on gas/RLNG
- 2.6. Likewise, the Authority has decided to increase the net LHV thermal efficiency for each of the units 1 – 6 of TPS Muzaffargarh by 1% for operation on gas/RLNG. The revised heat rates shall be applicable both for operation on gas and RLNG. The revised heat rates are provided hereunder:

Name of Power Station	Block	Unit	Fuel	Reference Net LHV Heat Rate (Btu/kWh)	Revised Net LHV Heat Rate (Btu/kWh)
TPS Muzaffargarh	1	1	Gas/RLNG	10,517	10,203
		2	Gas/RLNG	10,660	10,337
		3	Gas/RLNG	10,291	9,990
	2	4	Gas/RLNG	10,276	9,976
	3	5	Gas/RLNG	10,942	10,602
		6	Gas/RLNG	11,241	10,882

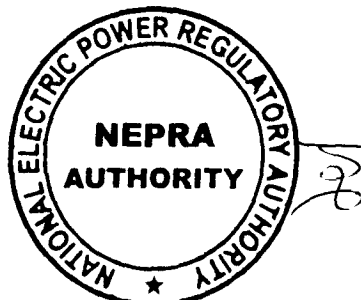


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- 2.7. Based on the revised heat rates, reference HHV gas price of Rs. 588.23/MMBTU, reference HHV RLNG price of Rs. 1,450.75/MMBTU (US\$ 11.6709/MMBTU @ of Rs. 124.3049/US\$) and HHV-LHV factor of 1.1076, the new reference fuel cost components are as under:

Name of Power Station	Block	Unit	Reference FCC Gas (Rs./kWh)	Reference FCC RLNG (Rs./kWh)
TPS Muzaffargarh	1	1	6.6472	16.3940
		2	6.7348	16.6101
		3	6.5085	16.0520
	2	4	6.4993	16.0293
	3	5	6.9075	17.0359
		6	7.0902	17.4865
GTPS Faisalabad	4	5-9	5.3325	13.1515

- 2.8. The Authority is cognizant of the fact that the aforementioned figures may not be accurate, therefore, the Authority directs NPGCL to carry out heat rate and net dependable capacity tests on RLNG fuel by an independent engineer within a period of 6 months from the date of notification of the instant decision.
- 2.9. The Authority directs that the selection process and appointment of an Independent Engineer shall be approved by NEPRA, whereas, the tests shall be conducted in the presence of NEPRA professionals as observers. Subsequent to the submission of the test report to the satisfaction of the Authority, onetime adjustment shall be made in the net capacity and fuel cost component, provided that the established net capacity and net LHV thermal efficiency on gas/RLNG does not fall below the already approved net capacity and net LHV thermal efficiency for RFO based operation of units 1 – 6 of TPS Muzaffargarh. Regarding degradation and part load adjustments the existing approved mechanism shall also be continued for RLNG based operation.
- 2.10. The Authority further noted that operation on RLNG shall result in savings in variable O&M due to lesser plant maintenance. However, at this stage, the savings are difficult to estimate. Therefore, the Authority has decided to provisionally maintain variable O&M allowed on RFO fuel for a period of one year, after which the same shall be revisited based on historical operational data of the plant, audited financial reports and additional investigations to be carried out by NEPRA.
- 2.11. The Authority also considers that there shall be increase in the availability of the plant for operation on RLNG as compared to RFO due to lesser outages. The annual



plant availability of 83% for units 1 – 6 of TPS Muzaffargarh, as per the PPA also needs to be reviewed and is expected to be available upto 84% on RLNG. Therefore, the Authority has decided to increase plant availability to 84% for units 1 – 6 of TPS Muzaffargarh.

3. ORDER

- 3.1. The Authority hereby determines the following fuel cost components for Northern Power Generation Company Limited on gas and RLNG w.e.f. 12th April 2018 for sale of electricity to the power purchaser:

Name of Power Station	Block	Unit	Reference FCC Gas (Rs./kWh)	Reference FCC RLNG (Rs./kWh)
TPS Muzaffargarh	1	1	6.6472	16.3940
		2	6.7348	16.6101
		3	6.5085	16.0520
	2	4	6.4993	16.0293
	3	5	6.9075	17.0359
		6	7.0902	17.4865
GTPS Faisalabad	4	5-9	5.3325	13.1515

- 3.2. NPGCL is directed to carry out heat rate and net dependable capacity tests on RLNG fuel by an independent engineer within a period of 6 months from the date of notification of the instant decision. NPGCL is further directed that the selection process and appointment of an Independent Engineer shall be approved by NEPRA, whereas, the tests shall be conducted in the presence of NEPRA professionals as observers. Subsequent to the submission of the test report to the satisfaction of the Authority, onetime adjustment shall be made in the net capacity and fuel cost component, provided that the established net capacity and net LHV thermal efficiency on gas/RLNG does not fall below the already approved net capacity and net LHV thermal efficiency for RFO based operation of units 1 – 6 of TPS Muzaffargarh. Regarding degradation and part load adjustments the existing approved mechanism shall also be continued for RLNG based operation.
- 3.3. Fuel cost component on each fuel shall be adjusted on account of variation in fuel prices as per following mechanism:

$$FC_{(Rev)} = FC_{(Ref)} \times FP_{(Rev)} / FP_{(Ref)}$$



Where:

$FC_{(Rev)}$ = Revised fuel cost component of energy charge part of tariff

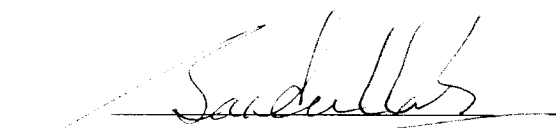
$FC_{(Ref)}$ = Reference fuel cost component


$FP_{(Rev)}$ = Revised applicable HHV price of RFO/Gas/RLNG as the case may be

$FP_{(Ref)}$ = Reference HHV prices, RFO of Rs. 39,000/ton, gas of Rs. 588.23/MMBTU and RLNG of Rs. 1,450.75/MMBTU


- 3.4. Existing variable O&M shall be applicable for a period of one year, after which the same shall be revisited based on historical operational data of the plant, audited financial reports and additional investigations to be carried out by NEPRA.
- 3.5. Dispatch shall be strictly in accordance with the economic merit order.
- 3.6. Open cycle operation of plant on RLNG shall not be allowed.
- 3.7. The above order of the Authority shall supersede the interim tariff vide decision dated 12th April 2018 in the matter of Immediate Application of RLNG as Alternative Fuel for Northern Power Generation Company Limited with order of refund of the excess amount charged to the power purchaser.
4. The above Order is to be notified in the official gazette in accordance with the provisions of Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act 1997.

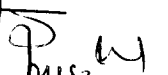
AUTHORITY


(Saif Ullah Chattha)
Member 18.10.2018


18/10/2018
(Rehmatullah Baloch)
Vice Chairman




(Brig. (R) Tariq Saddozai)


18/10/18