



Registrar

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

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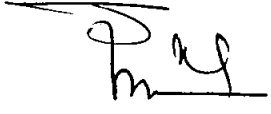
Subject: **Order of the Authority in the matter of Request of Northern Power Generation Company Ltd. (NPGCL) for approval of Start-up Costs for Cold, Warm and Hot Start of its Units**

Dear Sir,

Enclosed please find herewith the subject Order/Decision of the Authority (06 Pages) in the matter of Request of Northern Power Generation Company Ltd. (NPGCL) for approval of Start-up Costs for Cold, Warm and Hot Start of its Units.

2. The Order/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 within 30 days from the intimation of this Order/Decision. In the event the Federal Government fails to notify the subject Order/Decision or refer the matter to the Authority for reconsideration, within the time period specified in Section 31(7), then the Authority shall notify the same in the official Gazette pursuant to Section 31(7) of NEPRA Act.

Enclosure: As above


21 09 22
(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.

Order of the Authority in the Matter of Request of NPGCL for Approval of Start-up Costs for Cold, Warm and Hot Start of its Units

Background & Introduction:

Northern Power Generation Company Limited (NPGCL) in its Review Motion request against decision of the Authority in the matter of its Tariff Petition dated January 22, 2016 requested the Authority to include Start-up cost of its different units in O&M cost. The Authority in the decision dated October 19, 2016 decided "*the start-up cost should be in line with the Independent Power Producers and separate invoice should be raised based on actual cost in accordance with the Power Purchase Agreement.*"

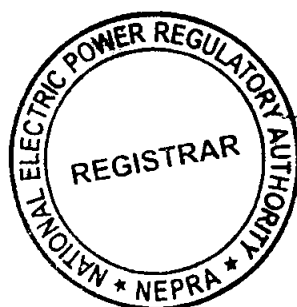
2. Pursuant to the decision of the Authority, NPGCL on October 31, 2018 filed a request for determination of Start-up costs. The Authority in Nov. 2018 directed NPGCL to get its claimed costs verified by CPPA-G. Accordingly, the Start-up Costs duly & mutually finalized by CPPA-G and NPGCL were submitted to NEPRA along with its working.

Proceedings:

3. The submissions made by NPGCL/CPPA-G were analysed by NEPRA and certain queries were raised. In the meantime, Jamshoro Power Company Limited (JPCL) in its Tariff Modification Petition dated Oct. 19, 2020 also requested NEPRA to determine its start-up charges. CPPA-G in this matter requested the Authority that it may look into both cases of JPCL and NPGCL in light of earlier correspondences in the matter of NPGCL. The Authority thereafter, in decision of Tariff modification petition of JPCL directed to club cases of JPCL and NPGCL.

4. To proceed in the matter, a discussion meeting was also held among CPPA-G, NPGCL, JPCL, NPCC and NEPRA on August 2, 2021 at NEPRA. In the meeting, it was apprised that the provision of start-up costs existed in PPA. Further, the stakeholders agreed that CPPA-G shall review and carryout due diligence of the costs claimed by NPGCL. Accordingly, CPPA-G submitted the following in the matter of start-up costs of different units of NPGCL:

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Block-I (Unit 1, 2, 3 TPS Muzaffargarh):

(i). Start-up on Indigenous Gas/RLNG

Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCF)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	1.97760	1,105,119	96,000	649,651	1,754,771
Warm	1.43820	803,693	48,000	324,826	1,128,518
Hot	0.9888	552,560	30,000	203,016	755,576

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
Reference CV:	Indigenous Gas/RLNG CV=	950.00	BTU/CFT
	EPP on I.Gas/RLNG=	6.767	Rs/kWh

(ii). Start-up on HSFO

Mode of Start-up	Fuel Consumption					Auxiliary Cons.		Total Startup Cost HSFO (Rs.)
	Cons. of HSD (Litres)	Cost of HSD (Rs.)	Cons. of HSFO (M.T.)	Cost of HSFO (Rs.)	Total Cost of Fuel (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. HSFO (Rs.)	
Cold	15,826	1,424,312	34.107	1,330,186	2,754,498	96,000	1,032,749	3,787,247
Warm	11,509	1,035,824	24.804	967,372	2,003,196	48,000	516,374	2,519,570
Hot	7,913	712,156	17.054	665,093	1,377,249	30,000	322,734	1,699,983

Reference Rate:	HSFO=	39,000	Rs/MT
	HSD=	90.00	Rs/Litre
	HSD CV=	35,614.00	Btu/Litre
Reference CV:	HSFO CV=	38,557.80	Btu/Kg
	EPP on HSFO (Unit-2)=	10.7578	Rs/kWh

Block-II (Unit 4 TPS Muzaffargarh):

(i). Start-up on Indigenous Gas/RLNG

Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCF)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	2.42240	1,353,682	193,526	1,281,009	2,634,691
Warm	1.81680	1,015,261	145,145	960,757	1,976,018
Hot	1.21120	676,841	51,123	338,400	1,015,241

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
Reference CV:	Indigenous Gas/RLNG CV=	950.00	BTU/CFT
	EPP on I.Gas/RLNG (Unit-2)=	6.6193	Rs/kWh

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(ii). Start-up on HSFO

Mode of Start-up	Fuel Consumption					Auxiliary Cons.		Total Startup Cost HSFO (Rs.)
	Cons. of HSD (Litres)	Cost of HSD (Rs.)	Cons. of HSFO (M.T.)	Cost of HSFO (Rs.)	Total Cost of Fuel (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. HSFO (Rs.)	
Cold	19,385	1,744,667	41.779	1,629,371	2,754,498	193,526	2,034,659	5,408,696
Warm	14,539	1,308,500	31.334	1,222,028	2,003,196	145,145	1,525,994	4,056,522
Hot	9,693	872,333	20.889	814,685	1,377,249	51,123	537,489	2,224,508

Reference Rate:	HSFO=	39.000	Rs/MT
	HSD=	90.00	Rs/Litre
Reference CV:	HSFO CV=	38,557.80	Btu/Kg
	HSD CV=	35,614.00	Btu/Litre
EPP on HSFO=		10.5136	Rs/kWh

Block-III (Unit 5, 6 TPS Muzaffargarh):

(i). Start-up on Indigenous Gas/RLNG

Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCF)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	2.10720	1,177,542	121,968	857,130	2,034,672
Warm	1.57000	877,343	81,312	571,420	1,448,763
Hot	1.05360	588,771	25,410	178,569	767,340

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
	Indigenous Gas/RLNG CV=	950.00	BTU/CFT
EPP on I.Gas/RLNG (Unit-2)=		7.0275	Rs/kWh

(ii). Start-up on HSFO

Mode of Start-up	Fuel Consumption					Auxiliary Cons.		Total Startup Cost HSFO (Rs.)
	Cons. of HSD (Litres)	Cost of HSD (Rs.)	Cons. of HSFO (M.T.)	Cost of HSFO (Rs.)	Total Cost of Fuel (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. HSFO (Rs.)	
Cold	16,863	1,517,653	36.343	1,417,359	2,935,011	121,968	1,364,468	4,299,479
Warm	12,564	1,130,749	27.078	1,056,024	2,186,773	81,312	909,645	3,096,418
Hot	8,431	758,826	18.171	708,679	1,467,506	25,410	284,264	1,751,770

Reference Rate:	HSFO=	39.000	Rs/MT
	HSD=	90.00	Rs/Litre
Reference CV:	HSFO CV=	38,557.80	Btu/Kg
	HSD CV=	35,614.00	Btu/Litre
EPP on HSFO (Unit-2)=		11.1871	Rs/kWh



Block-IV (Unit 5, 6, 7, 8, 9 GTPS Faisalabad):**Start-up on Indigenous Gas/RLNG**

Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCF)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	0.12750	71,249	15,848	86,411	157,661
Warm					
Hot					

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
Reference CV:	Indigenous Gas/RLNG CV=	950.00	BTU/CFT

EPP on I.Gas/RLNG (Unit-2) = 5.4525 Rs/kWh

Block-V (Unit 1, 2 SP5 Faisalabad):**(i). Start-up on Indigenous Gas/RLNG**

Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCF)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	1.56000	871,757	59,090	533,860	1,405,617
Warm	1.17000	653,818	49,760	449,567	1,103,384
Hot	0.78000	435,878	16,587	149,856	585,734

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
Reference CV:	Indigenous Gas/RLNG CV=	950.00	BTU/CFT

EPP on I.Gas/RLNG (Unit-2) = 9.0347 Rs/kWh

(ii). Start-up on HSFO

Mode of Start-up	Fuel Consumption					Auxiliary Cons.		Total Startup Cost HSFO (Rs.)
	Cons. of HSD (Litres)	Cost of HSD (Rs.)	Cons. of HSFO (M.T.)	Cost of HSFO (Rs.)	Total Cost of Fuel (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. HSFO (Rs.)	
Cold	12,484	1,123,547	25.624	999,348	2,122,895	59,090	824,879	2,947,773
Warm	9,363	842,660	19.218	749,511	1,592,171	49,760	694,635	2,286,806
Hot	6,242	561,773	12.812	499,674	1,061,447	16,587	231,545	1,292,992

Reference Rate:	HSFO=	39,000	Rs/MT
	HSD=	90.00	Rs/Litre
Reference CV:	HSFO CV=	38,557.80	Btu/Kg
	HSD CV=	35,614.00	Btu/Litre

EPP on HSFO (Unit-2) = 13.9597 Rs/kWh



Block-VI (Unit 1, 2, 3, 4 GTPS Faisalabad):**Start-up on Indigenous Gas/RLNG**

Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCFt)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	0.12750	71,249	504	4,866	76,115
Warm					
Hot					

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
Reference CV:	Indigenous Gas/RLNG CV=	950.00	BTU/CFT
	EPP on I.Gas/RLNG=	9.6545	Rs/kWh

Block-VII (Unit 1, 2, 3, 4 NGPS Multan):**(i). Start-up on Indigenous Gas/RLNG**

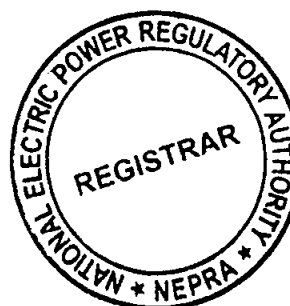
Mode of Start-up	Fuel Consumption		Auxiliary Cons.		Total Startup Cost (Rs.)
	Cons. of I.Gas/ RLNG (MMCFt)	Cost of I.Gas/ RLNG (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. I.Gas/ RLNG (Rs.)	
Cold	1.61040	368,563	128,000	438,426	806,989
Warm	1.20780	276,423	40,000	137,008	413,431
Hot	0.60390	138,211	6,000	20,551	158,762

Reference Rate:	Indigenous Gas/RLNG=	588.23	Rs/MMBTU
Reference CV:	Indigenous Gas/RLNG CV=	950.00	BTU/CFT
	EPP on I.Gas/RLNG=	3.4252	Rs/kWh

(ii). Start-up on HSFO

Mode of Start-up	Fuel Consumption					Auxiliary Cons.		Total Startup Cost HSFO (Rs.)
	Cons. of HSD (Litres)	Cost of HSD (Rs.)	Cons. of HSFO (M.T.)	Cost of HSFO (Rs.)	Total Cost of Fuel (Rs.)	Auxiliary Cons. (kWh)	Cost of Auxiliary cons. HSFO (Rs.)	
Cold	12,887	456,335	26,248	527,584	983,919	128,000	893,210	1,877,128
Warm	9,665	342,251	19,686	395,688	737,939	40,000	279,128	1,017,067
Hot	4,833	171,126	9,843	197,844	368,969	6,000	41,869	410,839

Reference Rate:	HSFO=	20,100	Rs/MT
	HSD=	90.00	Rs/Litre
Reference CV:	HSFO CV=	40,800	Btu/Kg
	HSD CV=	35,614.00	Btu/Litre
	EPP on HSFO=	6.9782	Rs/kWh

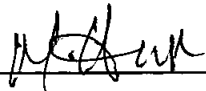


Analysis and Decision of the Authority:

5. The Authority in the matter noted that the costs as worked out by NPGCL and CPPA-G were based on an earlier report of a committee of professionals of CPPA-G, NPGCL and NPCC. During the proceedings, it was seen that the said report itself was based on information available in operation manuals of different units of NPGCL as well as operational experience of the plant.

6. The Authority noted that the report submitted by CPPA-G, NPCC and NPGCL regarding start-up cost of different units of NPGCL is satisfactory and approved the Start-up Cost as proposed by CPPA-G and given in paragraph 4 of this decision with effect from October 31, 2018. The Authority further decided that all reference values used for calculation of Start-up charges i.e. i). Rates of fuel. ii). CV of the fuel. iii) EPP will be applicable/adjusted as per actual.

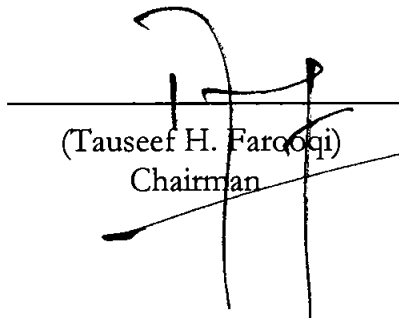
Authority



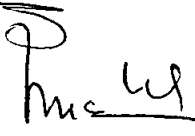
(Engr. Maqsood Anwar Khan)
Member



(Rafique Ahmed Shaikh)
Member



(Tauseef H. Farooqi)
Chairman


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