

Northern Power Generation Company Limited
Thermal Power Complex, Mehmood Kot Road, Muzaffargarh



Chief Executive Officer

Phone # 066-9200165 Fax # 066-9200166

No: NPGCL/CEO/TRF-271/4088

Date: 16 / 10 / 2020

The Registrar,
National Electric Power Regulatory Authority,
NEPRA Tower, Ataturk Avenue (East), G-5/1,
Islamabad.

Subject: PETITION FOR MODIFICATION OF REFERENCE TARIFF OF COMBINED CYCLE POWER PLANT NANDIPUR GUJRANWALA (NORTHERN POWER GENERATION COMPANY LIMITED - GENCO-III)

I, Sabeeh Uz Zaman Faruqi, Chief Executive Officer, NPGCL, being the duly authorized representative of Northern Power Generation Company Limited (NPGCL) hereby apply to the National Electric Power Regulatory Authority (NEPRA) for the approval of modification of Reference Tariff of GCPP Nandipur, pursuant to Section 17(3) of NEPRA Standards and Procedure Rules 1998.

I certify that the documents-in-support attached with this Application are prepared and submitted in conformity with the provisions of the Tariff modification, and undertake to abide by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

A Bank Draft No. BBB 14035534 dated 17.06.2020 amounting to PKR 1,713,408/- (Rupees - One Million Seven Hundred Thirteen Thousand Four Hundred Eight Only) drawn on Allied Bank Ltd. on account of subject Tariff Petition fee calculated in accordance with Schedule II to the AMPR, has already been submitted vide this office letter No. NPGCL/CEO/TRF-271/2611 dated 29.06.2020. Income Tax amounting to PKR 148,992/- @ 8% has been deducted and CPR will be provided upon receipt from FBR. For sake of clarity, it is submitted that we did not find enclosed aforesaid Bank Draft in the envelope carrying letter NEPRA/A/TRF-271/19082 dated 27.07.2020 and returning tariff petition submitted by NPGCL through letter dated 29.06.2020. We assume said Bank Draft has been retained by NEPRA.

For information to / c /
- DR-I / AN
- m
- copy to
- AGC / CI
- SA / CI
- AGC / CI
(Sabeeh Uz Zaman Faruqi)
Chief Executive Officer

REGISTRAR

Dy. No. 19/5406

19/5406

Chairman
- V/C / AGC
- MCA
- MMEI
- MLC



O/O Chief Financial Officer (CPPA-G)

No. CPPA/CFO/DGMF-I/ 20950-52

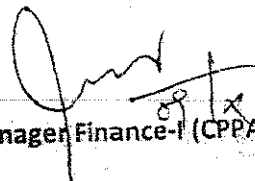
Date 09/10/2020

✓ Chief Executive Officer
NPGCL (Genco-III)
TPS, Muzzafar Garh.

Subject: Reduction in Capacity Charge of Government Owned Power Projects

Kindly refer to Ministry of Energy Power Division's Letter No. IPPs-10(18)/2020 dated 06-10-20 wherein it has been conveyed that summary on **Reduction in Capacity Charge of Government Owned Power Projects** has been approved by CCoE vide decision No. CCE 46/13/2020 dated 27-08-2020 with direction that *"the necessary process/ approvals, for submission of tariff revision petition to NEPRA, may be completed within two weeks' time"*. Further, it has also been required to submit implementation report to Ministry at the earliest.

In view of the above, it is requested to submit the Tariff Petition before NEPRA for revision/reduction in tariff within stipulated time frame under intimation to this office, failing which this office will be constrained to holding of invoices till submission of tariff petition on part of your office.


Manager Finance-I (CPPA)

DA - As above

Copy:

- Chief Financial Officer (CPPA-G)
- Dy. GM. Finance-I (CPPA-G)

NPGCL (GENCO-III)
TPS, Muzaffargarh.

CEO

CE/TO

HR & AD

Fin Director

Dir (R&S)

Dir (Tech)

RE-I

RE-II

RE-III

RE-IV

RE-V

RE-VI

RE-VII

RE-VIII

RE-IX

RE-X

RE-XI

RE-XII

RE-XIII

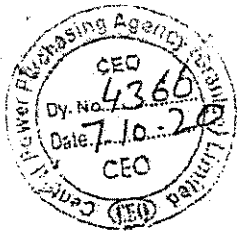
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RE-XV

RE-XVI

1828
12/10/20

1 DMA CPC



Government of Pakistan
Ministry of Energy
(Power Division)
Power Coordination, Policy and Finance Wing
*** ** ** ** **

SECRET

No. No. IPPs-10(18)/2020

Islamabad the 06TH October 2020

Subject: REDUCTION INCAPACITY CHARGE OF GOVERNMENT OWNED POWER PROJECTS

The undersigned is directed to state that a Summary on "Reduction incapacity charge of government owned power projects" was forwarded to the CCoE for consideration / approval. CCoE in its meeting held on 27.08.2020 considered the Summary and approved the proposal contained in para 5 of the summary. Relevant paras of the summary and decision of CCE is reproduced as under:

2. Para "4 & 5" of Summary submitted to the CCoE on 27.08.2020

4). The implementation status of the above decision and proposal therein after incorporating the reviews and comments of the relevant stakeholders is as under;

a) NEPRA allowed 17% RoE to WAPDA in PKR without any dollar indexation. The impact of reduction in RoE from 17% to 10% on WAPDA Revenue would be around Rs. 16 bln for FY-21. WAPDA submitted that any reduction in capacity component would have severe implication for timely completion of strategic projects (Diamer Basha, Mohmand and Dasu) and Rs. 180 bln additional allocation would be required from PSDP in next 10 years (Annex-II). The payables to WAPDA as on June 20 are around Rs. 208 bln.

b) With regard to GENCO, impact of reduction of ROE of all GENCOs to 10%, would be around Rs. 3.5 bln for FY 21. The payables of GENCOs as on Jun- 20 is around Rs. 48 bln. At present the profit making GENCOs are supporting the loss making GENCOs, which will require budgetary support to cover their losses (Annex-III).

c) After fixing RoE of Nuclear Power Plants at 14.50% IRR and freezing PKR to US dollar rate at Rs. 148 the impact of Nuclear power Plants would be around 2.07 bln for FY 2021. The payables of Nuclear Power Plants as on Jun-20 is Rs. 59 bln

d) To compare the Returns on Equity of Govt. owned RLNG IPPs with the other Government owned Projects the Return is reduced to 12% IRR with dollar indexation. The projected reduction in RLNG projects will be Rs. 6.71 bln. Currently the projects owned by the NPPMCL (Federal Government Owned Plants) is in the privatization list and bidding process near to finalization stage. Post privatization the returns will be dependent on the new investors in case of local investor's returns will be 17% without dollar indexation using US\$ to Rupee parity at Rs 148 per US\$, however foreign equity will get 12% with dollar indexation. The payables to NPPMCL and QATPL as on Jun-20 is around Rs. 42 bln.

5) Keeping in view the above the CCoE of the Cabinet is requested to consider following:

a. WAPDA Hydroelectric, GENCOs, Pakistan Atomic Energy Commission and Govt. Owned RLNGs Power plants (NPPMCL, QATPL, PTPL). The rate of return on equity will be adjusted as detailed in para 4 above, For this purpose respective Board of Directors and the WAPDA Authority is directed to immediately approach NEPRA for revision of their RoE component and accordingly revise their tariff determinations.

CCoE Decision No. CCE 46/13/2020 dated 27.08.2020

The Cabinet Committee on Energy (CCoE) considered the summary dated 26th August, 2020, submitted by the Power Division regarding **Reduction in Capacity Charges of Government owned power projects** and approved the proposal as contained at para-5 of the summary with the direction that the necessary process/ approvals, for submission of tariff revision petition to NEPRA, may be completed within two weeks' time.

II. The Committee further decided as follows:

- (i) The return on Equity of the Quaid-e-Azam Solar Power should also be included for reduction in line with the treatment being given to other Government IPPs.
- (ii) The financial settlement of payables to Government owned Power Plants (Rs. 357 billion as of June 20) shall also be considered at par for any future settlement with IPPs pursuant to the ongoing negotiations by the IPPs Committee.
- (iii) The financial deficit to WAPDA, due to reduction in RoE pursuant to above decision shall be arranged through PSDP funding for implementation of mega development power projects (Diamer Basha, Mohmand and Dasu).
- (iv) The financial deficit to GENCOs, due to reduction in RoE pursuant to this decision shall be funded by Finance Division to support loss making GENCOs.

3. The decision was ratified by the Cabinet vide case No. 648/35/2020 dated 08.09.2020.

4. The decision of the CCoE is hereby communicated for information and further necessary action. Further you are required to submit implementation report to this Ministry at the earliest.

(Muhammad Farhan)
Section Officer (PE)
Ph: 9209243

- a) The Chairman WAPDA, WAPDA house Lahore
- b) The Director General, SPD, Rawalpindi
- c) The Managing Director PEPCO Lahore
- d) The Chief Executive Officer CRPA Islamabad
- e) The Chief Executive Officer GHCL Islamabad
- f) The Chief Executive Officer NPPMCL, Malik Plaza, 2nd Floor, 7-C-1, Gulberg III, Lahore, Pakistan
- g) The Chief Executive Officer QATPL, First floor, 7/C-1 Gulberg III, Lahore
- h) The Chief Executive Officer PTPL, Ground Floor, 7/C-1 Gulberg III, Lahore
- i) The Chief Executive Officer, QASPP, 3rd Floor, 83A-E1, Gulberg III, Main Boulevard, Lahore.

For Information:

- a) The Secretary, Finance Division Islamabad
- b) The Secretary, Planning, Development and Special Initiatives Division Islamabad
- c) The Secretary, Ministry of Water Resources, Islamabad
- d) The Chief Secretary, Government of the Punjab, Lahore
- e) The Chairman NEPRA Islamabad

Cc.

1. PS to Minister for Energy (Power Division),
2. SPS to Secretary Power Division,
3. PS to Additional Secretary (II) Power Division,
4. PS to Joint Secretary (Power Finance), Power Division.

PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY



Member Finance

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Shahrah-e-Quaid-e-Azam Lahore
Pakistan
Off : +92 42 99202227
Fax : +92 42 99202484
Email : memberfinance@wapda.gov.pk

No.MF/APS/MF-21/458

Dated: 17.08.2020

The Secretary
Ministry of Energy (Power Division)
Govt of Pakistan
Islamabad

Subject: REVIEW MEETINGS ON IMPLEMENTATION OF DECISIONS OF CCOE

WAPDA is undertaking a challenging and monumental task of developing three major strategic projects including Diamer Basha (DBD), Mohmand and Dasu. This is unprecedented wherein an Organization based on its balance sheet, unblemished debt servicing record and professional reputation will manage to reorientate Pakistan's trajectory of economic growth and prosperity.

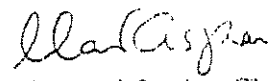
2. The edifice of this initiative is critically dependent on a robust financial strategy which hinges on Federal Govt. grants, WAPDA Equity & Commercial Financing. In the context of WAPDA Hydroelectric tariff and ensuing discussions to reduce ROE from 17% to 10%, I would like to highlight some important facts for your consideration:

- a) WAPDA Hydroelectric provided 32.3 billion units to National Grid in FY 2019-20 meeting one-third of the country's demand.
- b) Our low basket tariff of approx. Rs 1.87/KWh helps subsidize the entire energy spectrum keeping end consumer tariff within manageable limits.
- c) WAPDA doesn't earn any profits, rather our tariff only meets our operating and maintenance costs (O&M), debt servicing and Equity injection needs for dev. projects.
- d) Any reduction in Equity would reduce our Reinvestment capacity.
- e) It would have to be offset by commercial borrowing which would entail additional financing cost, again recoverable through tariff.
- f) Any structural change in our tariff mechanism and capital structure (current Debt: Equity at 80%:20%) would be taken very negatively by potential investors and donor agencies undermining our ability to raise further loans.
- g) PSDP grants are invariably tied with govt's fiscal space and this leaves Equity injection & commercial financing as the only recourse to bridge the financing gap.

3. WAPDA's capex needs over the next 9 years till completion of the aforementioned three projects are Rs 1,924 billion for which the Equity injection needs are Rs 304 billion. If ROE is decreased to 10%, WAPDA will face a shortfall of Rs 160 billion in its equity injection capability (details at Annex-1). The only recourse to bridge this gap are commercial loans which will increase debt servicing cost and resultantly, the high debt to equity ratio will make the projects commercially un-attractive making it difficult to secure financing at competitive rates.

4. In view of the above, it is requested that WAPDA may be delinked from the tariff optimization exercise. Any further cut to our already bare minimum tariff would have severe implications for timely completion of these projects which are of strategic national importance.

DA/As above.


Naveed Asghar Ch.
Member Finance

Copy to:-

-The Secretary, Ministry of Water Resources, Govt. of Pakistan, Islamabad.

ANNEX - 1

Impact of Decreasing the Rate of Equity Return

Capital Expenditure (Rs. Billion)	FY 2021	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	Total
Dasu HPP Stage I	71	65	70	82	71					359
Diamer Basha Dam Project (DBD)	46	134	133	164	175	194	144	98	66	1,155
Mohmand Dam Hydropower (MDHP)	50	59	61	47	18					235
Others	25	37	36	40	18	18				174
Total Capital Expenditure	192	295	301	334	282	213	144	98	66	1,924
Revenue @ 17% ROE	107	130	156	186	225	264	288	303	318	1,979
Revenue @ 10% ROE	91	116	142	171	206	240	259	271	282	1,778
Decrease in Revenues	(16)	(14)	(15)	(15)	(19)	(24)	(29)	(33)	(36)	(201)
Debt Servicing @ 17% ROE	44	68	91	116	176	200	209	212	257	1,372
Debt Servicing @ 10% ROE	44	68	93	122	187	212	225	230	282	1,462
Increase in Debt Servicing cost due to additional loans to Bridge shortfall of decreased equity contribution	(2)	(6)	(10)	(12)	(16)	(18)	(26)	(90)		
Total Equity required as per PC-1	25	50	40	42	35	40	32	16	24	304
Shortfall in Equity Contribution if ROE is decreased to 10%	(13)	(15)	(22)	(21)	(15)	(20)	(25)	(11)	(18)	(160)

Rationalization of Tariff - Public Sector GENCOs

Reduction in Return on Equity (ROE)

A. Introduction:

Following are the Ex-Wapda, Public Sector Generation Companies (GENCOs) which were created as a result of unbundling of Water & Power Development Authority (WAPDA) in 1998. These companies are incorporated under Companies Ordinance 1984 (now Companies Act-2017) and being managed by their respective Board of Directors:

1. Jamshoro Power Company Ltd. (GENCO-I)
2. Central Power Generation Company Ltd. (GENCO-II)
3. Northern Power Generation Company Ltd. (GENCO-III)
4. Laklira Power Generation Company Ltd. (GENCO-IV)

Subsequently, two new power plants have been added in GENCOs i.e. 747 MW CCPP at Guddu and 525 MW CCPP at Nandipur, which were commissioned in December-2014 & July-2015, respectively.

B. Generation License & Tariff:

These GENCOs have their respective Generation Licenses and Tariffs. GENCO-I, II & III have tariffs on 'take or pay' basis, whereas, GENCO-IV has tariff on 'take and pay' basis. Hence, GENCO-IV has no fixed ROE in its tariff.

C. Tariff Rationalization:

As a result of current reforms being undertaken by the government, the proposal for reduction in Return on Equity (ROE) of GENCOs is under consideration. The summary of present and proposed ROE along with annual impact in rupee terms is as under:

(Rupees in Million)

Name of GENCO	Block	Present ROE		Proposed ROE		Annual Impact
		Rate	Amount	Rate	Amount	
GENCO-I	Old Blocks	13.11%	866	10.00%	661	205
Sub-total			866		661	205
GENCO-II	Old Blocks	13.92%	302	10.00%	217	85
	747 MW Block	15.00%	6,255	10.00%	4,170	2,085
Sub-total			6,556		4,386	2,170
GENCO-III	Old Blocks	11.20%	1,847	10.00%	1,649	198
	Nandipur Block	15.00%	3,062	10.00%	2,041	1,021
Sub-total			4,909		3,690	1,219
Total			12,331		8,737	3,594

D. Impact:

By reduction of ROE of all GENCOs to 10%, there will be annual impact of Rs.3,594 million (based on unaudited results of FY 2019-20) on overall tariff of GENCOs. However, this may add loss of GENCO-III by Rs.1,219 million because it has after tax loss of Rs. 694 million for the FY 2018-19 (audited) and after tax profit of Rs.151 million for FY 2019-20 (provisional / unaudited), which will convert to loss of Rs.1,049 million by virtue of reduction in ROE. The yearly profitability of GENCO-I and GENCO-II will be reduced by Rs.205 million & Rs.2,170 million respectively.

Based on provisional / unaudited cash flows for FY 2019-20, the reduction of ROE to 10% will effect net annual cash flows of GENCO-I from Rs.136 million (+ve) to Rs.69 million (-ve) and GENCO-II from Rs.36 million (-ve) to Rs.1,254 million (-ve). The impact of proposed reduction in ROE will have impact of Rs.205 million, Rs.2,170 million and Rs.1,219 million on annual cash inflows of GENCO-I, GENCO-II and GENCO-III, respectively. Hence, with the reduction of ROE to 10%, there will be a total cash flow impact of Rs.3,594 million all GENCOs.

CENTRAL POWER GENERATION COMPANY LTD. (GENCO-II)
STATEMENT OF CASH FLOWS FOR THE FY 2019-20 - Provisional
IMPACT OF REDUCTION IN ROE TO 10%

(Rupees in Millions)

Description	FY 2019-20 (Prov)	Proposed @ 10% ROE	Difference
CASH FLOWS FROM OPERATING ACTIVITIES			
Profit before taxation	6,843	4,673	(2,170)
Adjustments for non cash items and others:	13,489	13,489	
Cash flows before working capital changes	20,332	18,162	(2,170)
Effect on cash flow due to working capital changes :			
(Increase) / decrease in current assets:	(4,000)	(4,000)	
Cash generated from operations	16,332	14,162	(2,170)
Staff benefits paid	(1,098)	(1,098)	
Net cash generated from operating activities	15,234	13,064	(2,170)
CASH FLOWS FROM INVESTING ACTIVITIES			
Net cash used in investing activities	(730)	(730)	
CASH FLOWS FROM FINANCING ACTIVITIES			
Net cash flow from financing activities	(10,294)	(10,294)	
Cash and cash equivalents at the end of the year Fav/(Unfav)	4,210	2,040	(2,170)

NORTHERN POWER GENERATION COMPANY LTD. (GENCO-III)
 STATEMENT OF CASH FLOWS FOR THE FY 2019-20 - Provisional
 IMPACT OF REDUCTION IN ROE TO 10%

(Rupees in Million)

DESCRIPTION	FY 2019-20 (Provisional)		
	EXISTING ROE	PROPOSED 10%	DIFFERENCE
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash generated from operations	6,634	5,415	(1,219)
Finance cost paid	(2,266)	(2,266)	
Income tax paid	(242)	(242)	
Staff retirement benefits paid	(1,969)	(1,969)	
Net decrease in long term advances	7	7	
Decrease in long term deposits			
Net cash generated from operating activities	2,164	946	(1,219)
CASH FLOWS FROM INVESTING ACTIVITIES			
Capital expenditure on property, plant and equipment	0	0	
Advance for capital work-in-progress received back			
Proceeds from disposal of freehold land	335	335	
Profit on bank deposits received	481	481.14	
Net cash (used in) / from investing activities	485	485	
CASH FLOWS FROM FINANCING ACTIVITIES			
Proceeds from long term loans			
Repayment of long term financing	(2,685)	(2,685)	
Grant received			
Net cash used in financing activities	(2,685)	(2,685)	
NET DECREASE IN CASH AND CASH EQUIVALENT	(36)	(1,254)	(1,219)

Central Power Generation Company Ltd. (GENCO-II)
Impact of Proposed Revision in ROE

(Rupees in Millions)

Description	Actual Results			Impact @ 10% RoE		
	2017-18 (Audited)	2018-19 (Audited)	2019-20 (Prov)	2017-18 (Audited)	2018-19 (Audited)	2019-20 (Prov)
Net sales	63,652	78,736	69,057	62,115	76,910	66,857
Cost of Sales	(55,465)	(68,574)	(58,748)	(55,465)	(68,574)	(58,748)
Gross Profit / (Loss)	8,187	10,162	10,309	6,650	8,336	8,109
Admin. & General Expenses	(864)	(1,481)	(665)	(864)	(1,481)	(665)
Operating Profit / (Loss)	7,323	8,681	9,644	5,786	6,855	7,444
Other Income	2,344	487	850	2,344	487	850
	9,667	9,168	10,494	8,130	7,342	8,294
Financial Charges	(3,235)	(4,174)	(3,651)	(3,235)	(4,174)	(3,651)
Profit / (Loss) before Tax	6,432	4,994	6,843	4,895	3,168	4,643
Taxation	(3,073)	(1,478)	(684)	(3,073)	(1,478)	(684)
Net Profit / (Loss)	3,358	3,517	6,159	1,821	1,691	3,959

Annual RoE Income:	Existing			@10%		
Existing (Old Guddu 13.92% & 747MW 15%)	4,681	5,547	6,556	3,144	3,722	4,380

Northern Power Generation Company Ltd. (GENCO-III)
Impact of Proposed Revision in ROE

Description	Actual Results			(Rupees in Million)		
	2017-18 (Audited)	2018-19 (Audited)	2019-20 (Prov.)	2017-18	2018-19	2019-20 (Prov.)
Sales	77,089	51,502	38,289	75,848	50,284	17,000
Cost of sales	(73,649)	(48,699)	(33,686)	(73,649)	(48,699)	(33,686)
Gross profit / (loss)	3,440	2,803	4,603	2,199	1,584	3,314
Administrative expenses	(941)	(935)	(996)	(941)	(935)	(996)
Other expenses	(7)	-	-	(7)	-	-
Other income	752	462	507	752	462	507
Finance cost	(2,422)	(2,835)	(3,388)	(2,422)	(2,835)	(3,388)
	(2,619)	(3,308)	(3,877)	(2,619)	(3,308)	(3,877)
Profit / (loss) before taxation	820	(505)	725	(420)	(1,724)	(493)
Taxation		(189)			(189)	
Profit / (loss) after taxation	820	(694)	725	(420)	(1,913)	(493)

Annual RoE Income:	Existing			@10%		
	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20
Old Blocks @ 12.20%	2,051	1,847	1,847	1,831	1,649	1,649
CCPP Namdipur @ 15%	3,062	3,062	3,062	2,041	2,041	2,041
TOTAL	5,113	4,909	4,909	3,872	3,690	3,690

PETITION FOR TARIFF MODIFICATION /REVISION OF REFERENCE TARIFF

Submitted to:

National Electric Power Regulatory Authority (NEPRA)

Submitted by:

**NORTHERN POWER GENERATION COMPANY LIMITED (NPGCL/
GENCO-III)**

FOR ITS

COMBINED CYCLE THERMAL POWER PLANT AT NANDIPUR

Financial Advisor

Technical Advisor



Tariff Modification/ Revision Application

Northern Power Generation Company Ltd (NPGCL)

Petition/Application

The Company is hereby filing the petition/ application (hereinafter the Modification Petition) to NEPRA for modification of certain costs allowed by NEPRA in the approved EPC Stage Tariff of Combined Cycle Power Plant (CCPP) at Nandipur as notified through letter No. No. NEPRA/TRF-271/NPGCL-2014/5617-5619 dated 14.04.2015, No. NEPRA/TRF-271/NPGCL-2014/1214-1216 dated 27.01.2016, No. NEPRA/TRF-271/NPGCL-2014/12403-12405 dated 02.09.2016 and No. NEPRA/TRF-271/NPGCL-2014/15831-15833 dated 29.08.2019.

Generation License

National Electric Power Regulatory Authority (NEPRA) granted NPGCL a Generation License bearing No. GL/03/2002 initially for a term of 25 years on July 01, 2002. NEPRA vide Modification-II dated October 31, 2014 to the generation license included Combined Cycle Power Plant, Nandipur and re-fixed the term of generation license up to the year 2044 with the addition of Nandipur CCPP Block.

Power Purchase Agreement

On novation from NTDC, CPPA-G has signed Power Purchase Agreement (PPA) with NPGCL on 15.09.2015, which includes CCPP Nandipur as Complex-V.

Grounds

This Modification Petition is based on facts, circumstances and grounds as elaborated at Section 3 of this Modification Petition.

Modified Costs & Tariff


Modified costs and Tariff resulting from Modification of certain costs as elaborated at Section 7 to 17 of this Modification Petition.

Prayer

It is prayed that NEPRA Authority:

- i. Accepts this Modification Petition,
- ii. Modifies the costs requested by the Petitioner
- iii. Approves the Modified EPC Stage Reference Tariff and
- iv. Approves the terms and conditions of the Modified EPC Stage Reference Tariff.

We would like to avail the opportunity of hearing in the matter before NEPRA Authority to fully elaborate our point of view supported by valid and cogent evidences to clarify grounds, facts and circumstances as laid down in this Modification Petition:


(Sabeeh-Uz-Zaman Faruqi)
Chief Executive Officer

Glossary

BTU	British Thermal Unit
CDC	Current Dependable Capacity
Cft	Cubic Feet
COD	Commercial Operation Date
Company	Northern Power Generation Company Limited
CPPA	Central Power Purchase Agency
CPI	Consumer Price Index
CPP	Capacity Purchase Price
CV	Calorific Value
CW	Cooling Water
EPP	Energy Purchase Price
FCC	Fuel Cost Component
FSA	Fuel Supply Agreement
GOP	Government of Pakistan
HEPSEC	Hydro Electric Power System Engineering Co.
HHV	Higher Heating Value
HR	Heat Rate
HSD	High Speed Diesel
IPP	Independent Power Producer
Kw	Kilowatt
kWh	Kilowatt hour
LHV	Lower Heating Value
MW	Mega Watt (1,000 kilowatts)
MWh	Mega Watt Hour
NEPRA/ Authority	National Electric Power Regulatory Authority
NTDC/ Power Purchaser	National Transmission and Dispatch Company Limited
NPGCL	Northern Power Generation Company Limited
O&M	Operation & Maintenance
OEM	Original Equipment Manufacturer
PES	Pakistan Engineering Services (Pvt.) Limited
Petitioner	Northern Power Generation Company Limited
PKR/ Rupees/ Rs.	Pak Rupees, Legal Currency of Pakistan
PPA	Power Purchase Agreement
PSO	Pakistan State Oil
RFO	Residual Fuel Oil
ROE	Return on Equity
ROI	Return on Investment
Ton	Metric Ton i.e. 1000 Kg
USAID	U.S. Agency for International Development
USD	United States Dollar
WAPDA	Pakistan Water & Power Development Authority
WPI	Wholesale Price Index



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Section 1 Petition Summary

Name of Applicant	Northern Power Generation Company Limited (NPGCL)
Registered Office:	197-WAPDA House, Lahore
Main Place of Business:	Thermal Power Station, Mahmood Kot Road, Tehsil & District Muzaffargarh
Telephone:	066-9200151-56
Facsimile:	066-9200166
Licensee details:	NPGCL is the licensee of National Electric Power Regulatory Authority (NEPRA) and holds the Generation License bearing No. GL/03/2002 dated 01.07.2002.

Representatives of NPGCL:

The petition is being filed through Engr. Sabeeh-Uz-Zaman Faruqi, Chief Executive Officer of NPGCL who has been duly authorized by Board of Directors vide Resolution passed in its meeting held on 29.04.2020 to sign and file the Tariff Petition **for revision/modification of the EPC Stage Reference Tariff of CCPP Nandipur of NPGCL**. Additionally, the following officers of NPGCL shall present any document, in support of the Tariff Petition, as needed and do all acts necessary for completion and processing of the application: -

- Finance Director
- Chief Engineer/ Technical Director

The Tariff Petition is being submitted with assistance of the following, and who shall also represent the case of NPGCL before NEPRA during hearing: -

- Financial Consultant: International Consulting Associates (Pvt.) Limited
- Technical Consultant: Elan Partners (Pvt.) Limited

The Affidavit of the signatory/ CEO is appended as and photocopy of the Bank Draft (tariff petition fees) attached.



Section 2 About the Petitioner and background of tariff

- 2.1 Consequent upon the restructuring of power wing of Pakistan Water and Power Development Authority, hereinafter referred to as the "WAPDA", its thermal power generation facilities have been split into four (4) independent generation companies, which are known as GENCO(s). Subsequent to this, GENCO - III, or Northern Power Generation Company Limited (NPGCL), was incorporated on October 15, 1998 as a Public Limited Company under the Companies Ordinance of 1984.
- 2.2 NPGCL commenced its commercial operation on March 01, 1999. It was originally organized to take over all the properties, rights, assets, obligation and liabilities of Power Stations of Thermal Power Station Muzaffargarh, Natural Gas Power Station Multan, Gas Turbine Power Station Faisalabad and Steam Power Station Faisalabad.
- 2.3 National Electric Power Regulatory Authority (NEPRA) granted NPGCL a Generation License bearing No. GL/03/2002 by, initially for a term of 25 years on July 01, 2002. NEPRA, vide Modification-I dated April 18, 2014, retired/excluded the three units of NGPS Multan i.e. Unit No. 1, 3 & 4 (each of 65.00 MW) from the Generation License of NPGCL. However, NEPRA vide Modification-II dated October 31, 2014 to the generation license included Combined Cycle Power Plant, Nandipur and re-fixed the term of generation license up to the year 2044 with the addition of Nandipur CCPP Block.
- 2.4 NEPRA determined power sale tariff of CCPP Nandipur on 14.04.2015 for 30 years based upon the tariff petition filed by NPGCL on 20.05.2014. NEPRA decided Review Motion on 27.01.2016 and also decided on 02.09.2016 the reconsideration request made by the Federal Govt. NEPRA has also decided Review Motion on 29.08.2019 filed by NPGCL on the fuel price adjustment prescribed by NEPRA on 27.01.2016 after allowing the impact of HHV-LHV factor.
- 2.5 Since after achieving COD with effect from 23.07.2015, on the request of NPGCL, NEPRA is adjusting the Fixed and Variable O&M component of CPP and EPP periodically in accordance with the indexation / adjustment mechanism provided in its Determinations.



Section 3 Grounds of Tariff Modification Petition

- 3.1 Disposing of the reconsideration request made by Federal Govt. on 02.09.2016, the NEPRA in pursuance of the OGRA decision, decided that Nandipur power plant shall also be given the prudent cost related to gas infrastructure at the time of COD on Gas Fuel. In this regard, NPGCL shall submit verifiable documentary evidence of actual cost incurred on gas pipeline, duly verified by SNGPL. The SNGPL has provided the verified & audited expenditure statement of Rs 2,808.7 million for gas pipeline & related infrastructure, therefore, Reference Tariff needs to be adjusted by incorporating the gas pipeline cost in the capital cost of the project.
- 3.2 In its determination dated 27.01.2016 (Review Motion), based upon estimates given by GE and DEC, NEPRA has assessed maximum ceiling of USD 20.29 M of gas conversion cost. NPGCL has executed works of conversion of plant on gas through competitive bidding, actual cost exceeds than the maximum ceiling amount assessed by NEPRA, this requires revision of Reference Tariff.
- 3.3 NEPRA has assessed spare part cost of USD 13.95 million including 2nd set GTG (\$3.93M) and BOP (\$5.3M) in Reference Tariff. The CCPP Nandipur comprised of 3 sets of GTG therefore, NPGCL has purchased spare parts for 3rd set GTG subsequently. Further actual purchase cost of BOP parts has also increased from the amount assessed by NEPRA in Reference Tariff.
- 3.4 In the Reference Tariff, NEPRA has assessed duties & taxes of Rs 2,009.9 million based upon two GTG sets, NPGCL has purchased necessary spare part for 3rd GTG set subsequently. Actual expenses of Duties & Taxes thus exceed the assessed amount which need revision of Reference Tariff.
- 3.5 NEPRA has assessed cost of fuel for testing as Rs 812.65 million in the Reference Tariff. The actual cost of fuel used in testing is much higher than those of assessed by NEPRA in the Reference Tariff, which requires its revision.
- 3.6 In its determination of 14.04.2015 regarding capital costs of power dispersal paid to NTDC to carry construction works on deposit work basis, the Authority remarked that; this cost should ideally be reflected in the NTDC investment for which the Authority sets a separate tariff and excluded the requested amount from allowed Non-EPC cost. Similarly, in its decision of 27.01.2016 the Authority remarked that there is separate regulatory body, i.e. OGRA which is mandated to review and approve such capex (gas connection infrastructure cost) of gas utilities and did not allow said cost. Later, in its determination of 02.09.2016, the Authority decided to allow actual cost of gas connection infrastructure cost duly verified by gas utility i.e. SNGPL. NTDC is not prepared to claim power dispersal cost in its own tariff therefore, on the analogy of allowing gas connection infrastructure cost paid to SNGPL, through this Modification Petition request is made to the Authority to modify Reference Tariff by allowing actual power dispersal cost of Rs 832.3 million as well duly verified by NTDC.




- 3.7 Determined Reference Tariff is based upon estimated non-EPC cost for buildings. Actual cost of construction of buildings is higher than the estimated amount, which needs modification of Reference Tariff.
- 3.8 In the assessed EPC escalation cost total in the **PKR column** the USD amount of 4.95 has been copied erroneously instead of 422.47, therefore the total of assessed EPC cost has been understated by PKR 417.52 (422.47 - 4.95) million for determining the Reference Tariff.
- 3.9 NEPRA has assessed O&M contractor mobilization cost of USD 5.0 million equivalent to PKR 515 million. Actual expenses on this account in equivalent PKR has increased due to currency fluctuation and incurring tender processing cost in local Rupee, which needs revision of Reference Tariff.
- 3.10 Determined Reference Tariff is based upon reduced EPC costs and Interest During Construction (IDC), which makes NPGCL operation unviable. Modification of Reference Tariff has been requested by allowing actual EPC and IDC costs incurred/paid by NPGCL.
- 3.11 In its determination of 27.01.2016, Authority decided to adjust O&M cost subject to adjustment at actual at the time of COD in case the revised actual number is less than the allowed. As per O&M Agreement signed by NPGCL with the O&M Contractor executed through competitive bidding, the fixed O&M charge is higher than the charge allowed by the Authority. Through this petition request has made request to the Authority to modify Reference Tariff by allowing actual fixed O&M cost.
- 3.12 Reference Tariff is determined based upon assessed working capital cost of Rs 159.76 million for operation of power plant on gas. SNGPL has signed an Interim agreement for supply of 100 MMCFD gas/RLNG on 10.05.2018, which requires NPGCL to provide cash deposit/SBLC of Rs 2.087 billion and make payment in 3 days for weekly billing. This contractual arrangement has increased working capital need of NPGCL to Rs 520.3 million, hence modification in Reference Tariff is required for the increased working capital cost on operation of Power Plant on gas.
- 3.13 In its determination of 14.04.2015, while determining Fuel Cost Component (FCC), the Authority did not consider certain factors which led to efficiency loss. Through this petition request is made to the Authority to allow one-time adjustment in the Heat Rate and modifying the Reference Tariff.
- 3.14 Government of Pakistan has directed the Company to get revised Reference Tariff for reduced Rate of Return @10% by filing tariff revision petition to NEPRA.



Section 4 Statement of Compliance

4.1. Statutory Compliance

- i. Under Section 7 of the "Regulation of Generation, Transmission & Distribution of Electric Power Act, 1997 (hereinafter called as 'NEPRA Act')", the Regulator is responsible for determining tariff, rates, charges and other terms and conditions for the supply of electricity by the generation, transmission and distribution companies.
- ii. NEPRA is also responsible for determining the process and procedures for reviewing tariffs, recommending tariff adjustments, and revision thereof.
- iii. Under Section 15 of the NEPRA Act, the Regulator has granted a Generation License to NPGCL/ Petitioner for a period of 25 years with effect from 01 July 2002. Later, NEPRA has made three (3) modifications in the generation licenses modifying the generating capacity and period of license.
- iv. Under Rule 6 of the Generation Rules 2000, the licensee can charge only such tariff for provision of electric power as approved by the Authority. Accordingly, on filing petitions by NPGCL for determination of its tariff for sale of its generated electricity, NEPRA has determined Reference Tariff for CCPP Nandipur as discussed above.
- v. As per NEPRA Regulations, the same generation tariff shall be applicable until new tariff is determined for the Petitioner.
- vi. This Tariff Modification Petition is being filed in accordance with Section 17(3) of NEPRA Tariff Standards and Procedure Rules 1998.
- vii. The Petitioner places reliance on the precedence of Uch-II Thermal Power Plant and Patrind Hydropower plant wherein NEPRA Authority accepted the tariff modification petition after their Commercial Operation Dates and determined modified Reference Tariff vide letter No. NEPRA/TRF-266/UCH-II-2014/6206-6208 dated April 22, 2015 and No. NEPRA/R/SA(Tariff)/TRF- 172/SHPL-20 11/19480-19482 July 29, 2020 respectively.



Section 5 Comparison of Proposed and Existing Reference Tariff

The comparison of Capacity Purchase Price, Fuel Cost Component and Variable Operation & Maintenance Charge Reference Tariff and requested modification of Reference Tariff w.e.f. COD of 23.07.2015 is given in the table below:

On RFO	Reference Tariff		Modified Reference Tariff	
	(Rs/kW/hr)	(Rs/kW/hr)	(Rs/kW/hr)	(Rs/kW/hr)
	Year 1-15	Year 16-30	Year 1-15	Year 16-30
Tariff Components				
Capacity Purchase Price	2.3930	1.2840	2.7932	1.2612
Fuel Cost Component	7.5246	7.5246	7.6126	7.6126
Variable O&M	0.4800	0.4800	0.4800	0.4800
Total	10.3976	9.2886	10.8858	9.3538

On GAS/RLNG	Reference Tariff		Modified Reference Tariff	
	(Rs/kW/hr)	(Rs/kW/hr)	(Rs/kW/hr)	(Rs/kW/hr)
	Year 1-15	Year 16-30	Year 1-15	Year 16-30
Tariff Components				
Capacity Purchase Price	2.1906	1.1274	2.7151	1.1938
Fuel Cost Component	7.3803	7.3803	7.6126	7.6126
Variable O&M	0.3435	0.3435	0.3435	0.3435
Total	9.9144	8.8512	10.6712	9.1499

The comparison of requested modified Reference Tariff effective from COD i.e. 23.07.2015 with the requested modification for reduced return on equity @10% has been shown in the table below:

Tariff Components	Modified Reference Tariff- COD		Modified Reference Tariff ROE 10%	
	Rs/kW/hr	Rs/kW/hr	Rs/kW/hr	Rs/kW/hr
	Year 1-15	Year 16-30	Year 1-15	Year 16-30
CPP- Return on Equity-on RFO	1.0915	1.0915	0.7277	0.7277
CPP- Return on Equity-on Gas/RLNG	1.0283	1.0283	0.6856	0.6856

Section 6 Relief Sought

The above revised/ modified Reference Tariff is presented for the approval by the Authority on the basis of the above stated facts, circumstances and assumptions **effective from the COD i.e. 23.07.2015** to the date of notification of revised Reference Tariff as a result of this Modification Petition and approval of revised Reference Tariff for reduced return on equity @10% effective from date of notification of revised Tariff for remaining PPA period of 30 years i.e. up to 2044, subject to necessary indexation/adjustments.



Section 7 Assumptions/ Basis of Revision of Reference Tariff (CAPEX)

7.1 Gas Connection Infrastructure Cost

For ease of reference the related paragraph of the Determination of 02.09.2016 has been reproduced as hereunder

16. Keeping in view the approval of OGRA, the Authority already approved the requested gas pipeline cost for the three LNG based power plants i.e., Bhikki, Balloki and Havelli Bahadar Shah. It was considered that since the decision of inclusion of gas infrastructure cost has already been given to LNG based power plant, therefore, as a matter of principle and in pursuance of the OGRA decision, it is decided that Nandipur power plant shall also be given the prudent cost related to gas infrastructure at the time of COD. In this regard, NPGCL shall submit verifiable documentary evidence of actual cost incurred on gas pipeline, duly verified by SNGPL.

The SNGPL has provided details of actual expenses of PKR 2,808.7 million for Gas connection Infrastructure cost duly verified by auditors. The summary picture of said cost has been shown in the table below:

Detail of actual verified expenses by SNGPL		PKR
1	Material Cost	1,458,437,000
2	Crops Compensation etc.	141,304,000
3	Construction Cost	635,163,000
4	Land Cost	16,860,000
5	Metering Station Cost	193,724,000
6	Auditor Remuneration	* 1,200,000
7	Right of Way	362,000,000
Total		2,808,688,000

NEPRA is therefore requested to modify the Reference Tariff by allowing PKR 2,808.688 million for gas connection Infrastructure cost.

7.2 Cost of Plant Conversion on Gas

For ease of reference the related paragraph of the Determination of 27.01.2016 has been reproduced as hereunder

49. The gas conversion cost of USD 20.29 million, which is based on estimate offered by GE worth USD 15.42 million and USD 4.87 million offered by DECL is, considered legitimate cost. The Authority has therefore decided to allow the same as maximum ceiling subject to adjustment at the time COD on the provision of documentary evidence.

As is evident from the determination stated above, based upon estimates given by GE and DEC, NEPRA has assessed maximum ceiling of USD 20.29 M of gas conversion cost. NPGCL has executed works of conversion of plant on gas through competitive bidding and the actual cost exceeds than the maximum ceiling amount assessed by NEPRA, this requires revision of Reference Tariff.

For supply of gas of required pressure to CCPN Nandipur, it was found necessitated to install a gas booster and acquire it from sister company (Central Power Generation Company (Genco-II) which was spare at that time, at book value to save the purchase processing time.



NPGCL invited Bids from the reputed and experienced Contractors for Engineering, Procurement, Construction and Commissioning of Gas Conversion Works/Services at CCPN Nandipur. The scope comprised of the installation of relocated and retrofitted gas compressors from Guddu Power Plant, all the related work for gas conversion (except modification in GTs and supply of fuel gas conditioning skids) and Performance Testing of Power Plant in Combined Cycle Mode.

Sealed bids were invited on Competitive Bidding (CB) basis through an advertisement published in English National Newspapers on 17-09-2016 (as seen below) of repute as well as on

PPRA website <http://www.ppra.org.pk>.

Bids were opened on October 14, 2016, following two (2) bidders participated:

- i. Dongfang Electric Corporation Limited, China (DECL)
- ii. Amcorp-Gasco Joint Venture, Pakistan

DECL read out price was USD 15,311,157 (PKR 1,598,484,790.80) whereas AGJV read out price was PKR 1,782,000,000. DECL was not declared successful bidder due to following reason:

- i. Bid security was not submitted along with the Bid.
- ii. Project completion time of DECL was 24 months as compared to desired minimum 06 months offered by M/S AGJV.

As per details along with documentary evidences enclosed to this Modification Petition, as against the assessed payable amounts, actual payments of PKR 4,963.674 million for Gas conversion have been made, summary picture of which has been shown in the table below:

Particulars of Cost Incurred	Amount (USD)	Amount (PKR)
M/s. GE - Material Supply	12,953,723.53	1,480,519,422
M/s. GE - Erection Works	2,464,558.90	271,298,644
M/s. AMCORP-GASCO - BOP	19,124,320.19	1,969,804,980
Gas Booster Compressor Station	12,058,753.84	1,242,051,646
Total	46,601,356.47	4,963,674,692
Duties & Taxes paid on plant conversion		463,903,644
Total		5,427,578,336

NEPRA is therefore requested to allow actual cost of PKR 4,963.674 million and duties & taxes of Rs 463,903,644 million on account of conversion of plant on gas and modify the Reference Tariff accordingly.

7.3 Cost of Spare Part

For ease of reference the related paragraph of the Determination of 27.01.2016 has been reproduced as hereunder:

Para # 42. Under this head, an amount of USD 10.99 million was allowed in the Impugned determination against the claimed amount of USD 15 million. The petitioner in its review motion, has requested to consider the disallowed cost of USD 4.01 million. These disallowed costs comprise of USD 0.09 million for defective parts of Fuel Oil Treatment Plant (FOTP) and USD 3.92 million for "other items". In support of other items, purchase order was provided

in the review motion worth USD 3.93 million, which related to 2nd set of GTG spare part. Therefore, for 2nd set of GTG, an amount of USD 3.93 million is allowed to the petitioner.

Para # 43. Furthermore, an amount of USD 6.27 million for Balance of Plant (BOP) payable on the basis of submitted bid price of the contract was allowed in the impugned determination. After submission of relevant documents in the review motion it was observed, that an amount of USD 6.27 million provisionally allowed on account of BOP payable now stands as USD 5.3 million. The excess amount of USD 0.96 million previously allowed is being adjusted on account of spare part cost. In total, the Petitioner is allowed USD 13.95 million under the head of spare part. This amount shall be subject to adjustment on account of relevant currency fluctuation at the time of COD. For this purpose, the petitioner shall provide all the documentary evidence substantiating that these payments have been made according to the spare part contract agreements.

NEPRA has assessed spare cost for 2 sets of GTG, whereas CCPP Nandipur comprised of 3 GTG, hence, NPGCL purchased spare parts for 3rd GTG subsequent to determination of Reference Tariff. As per details along with documentary evidences enclosed to this Modification Petition, as against the assessed payable amounts, actual payments of PKR 1,798.6 million for spare parts have been made. The summary picture has been shown in the table below:

Summary of Spare Parts	USD	PKR
P.O No. CE/PD/NP/EM/PO/5854-61 Dated 17.06.2014 (ISP-1)	4,292,790	440,253,872
P.O No. CE/PD/NP/EM/PO-CI&HGPI/4950-61 Dated 26.05.2015 (IPS-2)	3,937,039	418,272,627
P.O No. CE/PD/NP/EM/PO/CI&HGPI/Set-3/1529-39 Dated 04.12.2015 (ISP-2)	3,636,443	385,818,408
Total	11,866,273	1,244,344,906
P.O No. CE/PD/NP/EM/PO-BOP/5723-33 dated 19.06.215 (BOP)	5,286,346	544,260,299
Total cost of spare parts	17,152,619	1,798,605,206
Expenses already verified	3,420,000	399,430,000
Balance expenses to be verified	13,732,619	1,399,175,206

NEPRA is therefore, requested to modify Reference Tariff taking into account actual cost of PKR 1,798.605 million for purchase of necessary spare parts.

7.4 Taxes & Duties

For ease of reference the related paragraph of the Determination of 14.04.2015 has been reproduced as hereunder:

49. According to the petitioner Taxes and Duties cover all important taxes and duties as per the 2002 Power Policy. Under this head the petitioner claimed a total of PKR 2,000.92 million. Out of which, PKR 1,674.29 million is paid and PKR 335.61 million claimed to be payable. In support, the petitioner submitted copies of Goods Declarations of Pakistan Customs, Payment Challans of these duties through Pay orders of different banks submitted in Government treasury through National Bank of Pakistan, Copies of Bills of Lading and EPC invoices etc. on the basis of information / evidence provided, the Authority noted that out of total paid claim of PKR 1674.29 million, total taxes & duties including Sindh infrastructure cess amounting to PKR 1,609.561 million has been verified. For the payable amounting to PKR 335.61 million, the petitioner was asked to confirm what part of the main machinery still needed to be imported that prompted the petitioner for such allocations on account of duties and import taxes. The petitioner reply in the matter is still pending.

50. The Authority has already allowed a total of PKR 6,314.75 million payables in foreign portion of EPC contract i.e. PKR 1,379.93 million payable in USD portion of EPC and PKR 4,934.82 million payable in euro portion of EPC. The Petitioner is expected to pay imported and other related duties on the EPC payables. Accordingly, the Authority has decided to assume duties @ 6% (5% custom and 1% regulatory duty) at remaining portion of EPC contract that work out to be PKR 378.89 million. In view thereof, the Authority has allowed PKR 1,988.45 million on account of duties and taxes. Out of which duties and taxes amounting to PKR 378.89 million will be subject to adjustment on actual at the time of COD.

In the Reference Tariff, NEPRA has assessed duties & taxes of Rs 2,009.9 million based upon two GTG sets, NPGCL has purchased necessary spare part for 3rd GTG set subsequently. Actual expenses of Duties & Taxes thus exceed the assessed amount which need revision of Reference Tariff. Summary of Duties & Taxes actual expenses has been shown in the table below:

Nature of Imports	Duties & Taxes (PKR)
Power Plant Equipment	1,729,251,128
Spare Part 1st GTG (ISP-1)	123,265,774
Spare Part 2nd GTG (ISP-2)	131,797,661
Spare Part 2nd GTG (ISP-3)	119,097,236
Spare Parts BOP	261,904,422
Total Expenses	2,365,316,221
Expenses already Verified	1,631,010,000
Actual Duties & Taxes to be verified	734,306,221

As per details along with documentary evidences enclosed to this application, as against the assessed amounts, actual expenses of PKR 2,365.316 million for Taxes & Duties have been incurred, which NEPRA is requested to allow and modify the Reference Tariff accordingly.

7.5 Fuel for Testing

For ease of reference the related paragraph of the Determination of 14.04.2015 has been reproduced as hereunder:

39. *Fuel for Testing:* This includes costs of fuel required for testing before start of commercial operation of the Project, which will remain unbilled to power purchaser. The petitioner claimed PKR 1,408.39 million or USD 13.67 Million under fuel for testing. This cost was estimated @ PKR 98 per Liter HSD price and about PKR 68000 per ton HSFO price. For tariff assessment, current ex-GST HSD price of 64.51 per Liter and ex-GST RFO price of PKR 38,265 per ton (including PKR 1,500 per ton freight) have been assumed. Accordingly, an overall cost under this head has been assessed as PKR 812.65 million. This cost will be subject to adjustment on the basis of actual prices prevailed at the time of consumption. The Petitioner shall submit the documentary evidence for ensuring prudent utility practice during testing.

As per details along with documentary evidences enclosed to this Modification Petition, as against the assessed payable amounts, actual fuel cost of PKR 3,938.291 million for fuel for testing have been incurred as per summary picture given below:

Testing Activity	HSFO Cost	HSD Cost	Total in PKR
1. Total fuel consumed in 14 days reliability test run	2,793,783,584	27,804	2,793,811,388
2. Total fuel consumed on 05 days initial operation	897,680,570	245,973	897,926,543
3. Total fuel consumed on 01 day trial run	246,467,336	85,689	246,553,025
Total	3,937,931,490	359,466	3,938,290,956

NEPRA is therefore, requested to allow actual testing fuel cost of PKR 3,938.291 million and modify the Reference Tariff accordingly.

7.6 Power Dispersal

NPGCL in its petition of 20.05.2014 has claimed power dispersal cost of PKR 762 million covering the funds given by NPGCL to NTDC for evacuation of power from Nandipur power plant at that time. NEPRA has excluded this amount with the contention that power evacuation is the responsibility of power purchaser and its cost should ideally be reflected in the NTDC investment plan.

For ease of reference the related paragraph of the Determination has been reproduced as hereunder:

40. Power Dispersal: According to the petitioner, cost on account of power dispersal was PKR 762.1 million that also includes payables of PKR 15 million. The Authority considers that power dispersal is the responsibility of the power purchaser. This cost should ideally be reflected in the NTDC investment for which the Authority sets a separate tariff. This point was also raised by CPPA during the hearing. In view thereof, power dispersal cost amounting to PKR 762.1 million has been excluded.

In connection with project development activities, NPGCL took-up the matter with NTDC to construct transmission line for evacuation of power from CCPP Nandipur. The NTDC responded that they have financing constraints therefore NTDC will construct the transmission line on deposit work basis on providing funds by NPGCL. Accordingly, NPGCL provided funds to NTDC as per work estimates for this purpose. On completion of the task, the NTDC has provided adjustment account on the basis of actual expenses with the understanding that NPGCL should make request to NEPRA to include power dispersal cost in its tariff. The current Power Generation Policy of the GOP allows this arrangement as well.

The NTDC has provided details of actual expenses of PKR 832.271 million for power dispersal cost. The summary picture of said cost has been shown in the table below:

Detail of actual verified CAPEX by NTDC		PKR
1	Material Cost	436,525,735
2	Civil Works	224,006,994
3	Departmental Charges	171,738,510
Total		832,271,239

NEPRA is therefore requested to modify Reference Tariff by allowing PKR 832.271 million for power dispersal cost duly verified by NTDC.

7.7 Land preparation and Buildings

For ease of reference the related paragraph of the Determination of 14.04.2015 has been reproduced as hereunder:

38. Land Preparation and Building: According to the petitioner, this includes land preparation costs and civil work not covered in EPC Contract. Under this head, the petitioner claimed

USD 4.84 million. Land and Building section comprise numerous small to medium size contracts. These contracts ranged from PKR 75.81 million for building residential houses/hostel to contract worth PKR 0.172 million awarded for PM inaugural plaque. Under this head, the petitioner claimed cost such as a stage for Prime Minister Visit cost, development of Children, establishment of view point etc. These costs being excessive and not directly related to power plant essential operation has been excluded. Some of cost lacked proper documentation therefore has been disregarded in the total assessed Non-EPC cost. The petitioner claimed other cost for internal access road dispensary etc. which though being a genuine requirement, was not backed by any data supporting documents. Such costs were disregarded in the view that it will be allowed on the basis of documentary evidence at the time of COD. In view thereof, the Authority has assessed a total of PKR 363.835 million out of PKR 487.47 million requested as reasonable amount for Land preparation and Buildings.

At the time of filing tariff petition in 2014 certain works of land preparation and buildings were under construction, hence based upon estimated costs, NPGCL has claimed cost of PKR 487.47 million on this account. Now all such works have been completed at a cost of PKR 487.815 million and works of PKR 170,1 million are in progress. All the works are related to project and cost has prudently incurred, summary picture of which has been shown in table below:

Sr. No.	Nature of work	Amount (Million PKR)
1.	Residential Buildings & Civil works	285,900,578
2.	Non-Residential buildings & civil works	201,914,069
3.	Civil works in progress	170,064,258
4.	Total	657,878,905

The documentary evidences of aforesaid mentioned expenses have enclosed to this application. It is therefore, NEPRA is requested to allow revised construction costs of buildings of PKR 657.915 million and modify the Reference Tariff accordingly.

7.8 Correction of Error in PKR Escalation Head

At para 31 of the Determination of 14.04.2015 of NEPRA, the comparison of claimed and assessed PKR Escalation cost has been made as shown in the following table:

Amount in Million												
Particulars	Assessed Paid		Claimed Paid		Assessed Payable		Claimed Payable		Assessed Total		Claimed Total	
	USD	PKR	USD	PKR	USD	PKR	USD	PKR	USD	PKR	USD	PKR
PKR Escalation	4.95	422.47	5.24	447.99	-	-	1.38	141.67	4.95	422.47	6.62	589.66

In the assessed total in the **PKR escalation column**, the USD amount of 4.95 million has been copied erroneously instead of 422.47 million, therefore the total of assessed EPC cost has been understated by PKR 417.52 (422.47 - 4.95) million. NEPRA is therefore, requested to modify Reference Tariff by allowing understated PKR escalation of PKR 417.52 million by correcting the error.

7.9 O&M Mobilization

For ease of reference the related paragraph of the Determination of 14.04.2015 has been reproduced as hereunder

54. According to the petitioner, O&M mobilization covers the mobilization of O&M Contractor's personnel, i.e. hiring local personnel for operation and maintenance, training on GTG, Steam turbine, BOP, FOTP and auxiliaries etc. under this head the petitioner claimed an amount of USD5 million. The petitioner has not shared any bids/quotations on the subject, although it claims to have done the bidding, and GE/Albario and TNB offered O&M contract proposals consisting of mobilization costs. The Authority appreciated that the petitioner has shown commitment to, outsource the O&M contract to reputable third-party contractor unlike the practice in vogue in GENCOs.

55. The Authority has noted that for 425 MW CCPP project, the O&M mobilization cost claimed of USD 5 million is comparable with O&M mobilization cost allowed to IPPs with similar technology. Therefore, at this stage, O&M mobilization cost of USD5 million has been allowed, which will be subject to adjustment based on provision of documentary evidence at the time of COD.

As per details along with documentary evidences enclosed to this application, as against the assessed payable amounts, actual payments of PKR 649.196 million have been made, including USD 4.5 million and other related expenses for O&M Mobilization, NEPRA is requested to modify Reference Tariff by taking into account actual O&M contractor mobilization cost.

7.10 Revised EPC Cost

For ease of reference, the related paragraphs of the Determination made by NEPRA on 27.01.2016 in this matter have been reproduced as hereunder:

Para # 61. The Authority has assessed total EPC cost of 315.94 million at equivalent US dollar. That includes the following payables:

EPC Cost Payable	Amount in Million
US\$ portion	13.40
Euro Portion	0.39
PKR portion	772.77

Para # 62. Since the exact timing of the above-mentioned payables to EPC contractor is not known at this point in time therefore, adjustment for relevant foreign currency fluctuation for the portion of payment in the relevant foreign currency will be made at COD. In this regard, the sponsor will be required to provide all the necessary relevant details along with documentary evidence. At this stage USD portion of EPC is converted to equivalent PKR at assumed PKR to USD exchange rate of 103 and Euro portion at assumed PKR to Euro exchange rate of 129.80.

Para # 63. The adjustment shall be only for currency fluctuation against the reference parity values according to the following mechanism;

$$\text{EPC payables (\$ portion) (Adj)} = \text{PKR } 1,379.93 \text{ million} / 103 \times E (\text{PR})$$

$$\text{EPC payables (Euro Portion) (Adj)} = \text{PKR } 50.77 \text{ million} / 129.80 \times E (\text{PR})$$

Where:

$E (\text{PR})$ = Respective Weighted Average PKR/EURO and PKR/USD parity based upon timing of the payment

The actual EPC cost after making the pending payments exceeds the assessed EPC amount, the comparison of assessed EPC and actual EPC cost has been shown in the table below:

Particulars	Assessed EPC Cost		Paid/ Verified		Adjustable Exp in Mln	
	Mln. USD	Mln. PKR	Mln. USD	Mln. PKR	Mln. USD	Mln. PKR
USD	164.92	15,063.82	151.52	13,683.89	13.40	1,379.93
Euro	109.22	9,071.92	108.73	9,021.15	0.49	50.77
PKR	36.86	3,249.21	29.36	2,476.44	7.50	772.77
Total EPC	311.00	27,384.95	289.61	25,181.48	21.39	2,203.47

Particulars	Revised EPC Cost		Paid/ Verified		Actual adjustable Exp in Mln	
	Mln. USD	Mln. PKR	Mln. USD	Mln. PKR	Mln. USD	Mln. PKR
USD	164.46	15,033.46	151.52	13,683.89	12.94	1,349.57
Euro	109.22	9,066.84	108.73	9,021.15	0.49	45.69
PKR	40.55	3,629.13	29.36	2,476.44	11.19	1,152.69
Total EPC	314.23	27,729.42	289.61	25,181.48	24.63	2,547.94

As per details along with documentary evidences enclosed to this application, as against the assessed payable amounts for USD, Euro and PKR currencies of EPC Contract, actual payments equivalent to PKR 349.57 million, 45.686 million and 1,152.68 million have been made respectively. NEPRA is therefore, requested to allow revision of Reference Tariff for actual cost against assessed EPC payable cost.

7.11 EPC Cost for Project resumption

In its Determination of 14.04.2015, NEPRA has disallowed project resumption cost of PKR 6,725.57 million on the plea that it pertains to delay in the construction of the project. It may be noted that NPGCL has completed the project at much competitive EPC cost even after paying the project resumption cost.

NPGCL executed Amendment No# 2 to the original contract with EPC contractor amounting to USD 67 Million in the light of decision of Honorable Supreme Court of Pakistan. This cost is part and parcel of original cost of the project through which original investment and project was saved by the management in this crucial time when there is huge shortage of generation capacity in the country. Although it changed the project economics by some extent but still EPC Cost of the project remained far below than other comparable projects installed in the country in almost same period. One Example is the UCH-II power project which uses the same GE Turbines having less capacity. Following is the comparison table of EPC costs of Nandipur Project with UCH-II Power project.

	UCH-II (386.2 MW)	Nandipur (505.592 MW)
EPC Cost	USD 370.253 Million	USD 360.85 Million
Per Mw EPC Cost	USD 0.959 Million	USD 0.714 Million

From the above table it is evident that even by allowing these costs NEPRA, will not cross the benchmark set itself by the Learned Authority. It is therefore NEPRA is requested to allow project resumption cost of PKR 4,531.08 million as EPC cost and modify the Reference Tariff accordingly.

Section 8 Financing of the Project cost

- 8.1 In its Determination of 14.04.2015, NEPRA has disallowed USD 4.53 million paid on arranging foreign loan facilities on the plea that NPGCL has not availed these loans. NEPRA has also disallowed Forced Payment against Documents (FPAD) of PKR 8,410.84 million on the plea that it had to be paid by local banks due to not having backed by foreign currency financing. On the other hand, has shared only 40% of the difference between 3% benchmark allowed to IPPS and weighted average margin of 1.82% of the loan took by NPGCL. To be fair enough, the 100% difference of margin should have been allowed to NPGCL to compensate the disallowed amount of financing cost on foreign loans, FPAD and indexation in USD for potentially availed foreign currency loans. It is therefore requested to allow 3% spread over KIBOR (8.53%) matching to the benchmark allowed to the IPPs and modify the Reference Tariff accordingly.
- 8.2 Through CFO CPPA-G letter No. CPPA/CFO/DGMF-1/20950-52 dated 09.10.2020, Government of Pakistan has directed the Company to file petition to NEPRA for reduced return of equity @10% instead of existing 15%.

Section 9 Assumptions/ Basis of Tariff Modification for OPEX

9.1 O&M Cost

For ease of reference the related paragraph of the Determination of 27.01.2016 has been reproduced as hereunder:

"The petitioner's request Fixed O&M on operation on both fuels are reasonable and within the benchmark owed to similar IPPs therefore, it is allowed as such. The O&M cost will be subject to adjustment at actual at the time of COD in case the revised actual number is less than the allowed".

Customarily, NPGCL carries out operation and maintenance of its power plants through in-house O&M team. However, the O&M of CCPP Nandipur has been outsourced to M/s. Hydro Electric Power System Engineering Company, China (HEPSEC) through competitive process. The agreement in this regard was signed on 06.02.2017. As per terms of the agreement, NPGCL will pay contract price of PKR 2,742,384,418.48 and USD 130,345,217.28 during a period of 10 years. Some of the charges are to be paid monthly, quarterly and on event basis during the tenor of the O&M Contract.

For reference purposes, the Fixed O&M of contract in foreign currency is to be paid annually for Rs 763.93 million worked out at the rate of PKR 0.2245/kW/h for generation of 34,028,279,568 kWh in 10 years. In addition, to supervise the O&M contract, NPGCL has to incur an estimated amount of fixed O&M cost of Rs 282 million per annum comprising of mainly expenses of salaries & benefits of security personal, O&M contract execution staff and land lease rentals as per break-up shown in table below:

NPGCL Fixed O&M margin per annum	Mln.Rs
Security expenses	200.40
Corporate office Admin cost	81.60
land lease rental	8.99
Total	282.00

The total annual fixed O&M cost works out as Rs 1,045.93 million (Rs 763.93 M Foreign + Rs 282 M Local). The fixed O&M rate at Reference Net Dependable Capacity on operation on RFO and Gas works out as under:

Yearly O&M Expenses	PKR Million	PKR/kWh (on RFO)	PKR/kWh (on Gas)
Fixed O&M – Foreign	763.93	0.2120	0.1936
Fixed O&M- Local	282.00	0.0783	0.0715
Total Fixed O&M	1,045.93	0.2903	0.2651
Reference Net Dependable Capacity		411.351MW	450.4777 MW
Yearly NEO at Reference Capacity		3,603.4 GWh	3,946 GWh

NEPRA has allowed adjustments in O&M charge on quarterly basis, whereas under the O&M Agreement the USD parity is indexed naturally while making monthly payment of O&M service fee. Therefore, same is required to be indexed monthly as per provisions of the O&M contract.

Therefore, NEPRA is requested to modify Reference Tariff of Fixed O&M charge as per actual both for operations i.e. on RFO and on Gas as shown in the table above and also change the indexation of O&M charge from quarterly to monthly basis.

9.2 Working Capital Cost- Operation on Gas

For ease of reference the related paragraph of the Determination of 27.01.2016 has been reproduced as hereunder:

55. Similarly, based upon the assessed requirement of Rs. 1,517.23 million on operation on RLNG, while taking base KIBOR of KIBOR 8.53% + 200 points spread, the cost of working capital component has been assessed as Rs.159.76 million or Rs. 0.0405 per kW per hour on the basis of RLNG rate of USD 9.57/MMbtu (LHV) or equivalent Rs. 956.97/MMbtu. This cost shall be adjusted according to the actual prices gas/RLNG price at the time of COD along with the actual KIBOR. This component shall be quarterly or biannually adjusted as the case may be, with 3 months or 6-month KIBOR post COD.

Reference Tariff has been determined based upon assessed working capital cost of Rs 159.76 million for operation of power plant on gas. SNGPL has signed an Interim Agreement for supply of 100 MMCFD gas/RLNG on 10.05.2018, which requires NPGCL to provide cash deposit/ SBLC of Rs 2.087 billion and make payment in 3 days for weekly billing. This contractual arrangement has increased working capital need of NPGCL to Rs 520.53 million, hence modification in Reference Tariff is required for the increased working capital cost on operation of Power Plant on gas. The working of modified working capital cost on Gas/RLNG has been shown as under:

1. Cost of Cash Deposit/ SBLC

Amount of Cash Deposit/SBLC (Mln. Rs)	2,087
6 Month KIBOR	11.25%
Spread	2.00%
Interest Rate (11.25+2.0)	13.25%
Sub. Total Working Capital Cost	276.53

2. Cost of Current billing/payment (7+3) days

Last 3-year average generation on Gas (GWh)	1,925
Last 3-year average Gas supplied (MMCF)	15,888
Last 3-year average Gas supplied (MMBTU)	14,824
CV= 933.37 BTU/SCF	
Average Gas Supply per month (MMBTU)	1,235
RLNG Price (USD/ MMBTU)	10.5338
USD Conversion Rate	141.519
RLNG Price (PKR/ MMBTU) (10.5338*141.519)	1,490.73
Gas price assessed (Mln.RS)	1,841.53
Interest Rate (11.25+2.0)	13.25%
Sub. Total Working Capital Cost	244.00
G. Total Working Capital Cost (1+2)	520.53

Section 10 Post-COD Tariff Adjustments

10.1 Through this Modification Petition, revised Reference Tariff has been requested as shown below:

Capacity Charge Ref. Tariff	Revised Reference Tariff-RFO		Revised Reference Tariff-Gas	
	Year 1-15	Year 16-30	Year 1-15	Year 16-30
Dependable Capacity (MW)	411.351	411.351	450.478	450.478
NEO at 100% capacity (GWh)	3,603.4	3,603.4	3,946.2	3,946.2
Capacity Charge Reference Tariff	Rs/kW/hr	Rs/kW/hr	Rs/kW/hr	Rs/kW/hr
Fixed O&M- Foreign	0.2120	0.2120	0.1936	0.1936
Fixed O&M- Local	0.0783	0.0783	0.0715	0.0715
Cost of working capital	0.1213	0.1213	0.1319	0.1319
Cost of Insurance	0.1219	0.1219	0.1113	0.1113
Debt servicing	1.5321	-	1.5212	-
Return on Equity	1.0915	1.0915	1.0283	1.0283
Total	3.1571	1.6250	3.0578	1.5366

10.2 As provided at paragraph# 65 of the Determination of 27.01.2016, the Reference Tariff on RFO has been determined on the basis of minimum net capacity of 411.351 MW at delivery point at mean site conditions. There is no change in Initial Dependable Capacity (IDC) on RFO therefore, adjustment in Reference Tariff on account of variation in IDC on RFO is not requested.

10.3 As provided at Paragraph#66 of the Determination of 27.01.2016, the reference tariff on Gas/RLNG has been determined on the basis of minimum net capacity of 450.4777 MW at delivery point at mean site conditions. All the tariff components except fuel cost component shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) tests to be carried out for determination of contracted capacity. Adjustment shall not be made if IDC is established less than 450.4777 MW net capacity at reference site conditions. The adjustments shall be made according to the following formula:

$$CC (Adj) = CC (Ref) \times 450.4777 / NC (IDC)$$

$$CC (Adj) = \text{Adjusted relevant Capacity Charge components of tariff}$$

$$CC(Ref) = \text{Reference relevant Capacity Charge components of tariff}$$

$$NC (IDC) = \text{Net Capacity at reference site conditions established at the time of IDC test}$$

Note:- Reference capacity charge components of Tariff i.e. Revised O&M Foreign, Revised O&M Local, Insurance, Debt Servicing, Return on Equity etc. to be adjusted as per IDC test.

As per test conducted on 08.04.2019 on RLNG, the net capacity has been worked out as 500.490 MW as per details shown below;



Fuel	Gross Capacity (MW)	Net Dependable Capacity (MW)	Auxiliary Consumption (MW / %)
Gas/RLNG	513.51	500.490	13.02 / 2.536

In line with given formula of adjustment, Revised O&M Foreign, Revised O&M Local, Insurance, Debt Servicing., Return on Equity has been be adjusted as per IDC test as shown in the table:

Adjustable CPP Tariff Component	CC(Ref) Modified (Rs/kW/hr)	Ref (IDC) (MW)	NC (IDC) (MW)	CC (Adj) (Rs/kW/hr)
Fixed O&M- Foreign	0.1936	450.4777	500.4900	0.1742
Fixed O&M- Local	0.0715	450.4777	500.4900	0.0643
Cost of Insurance	0.1113	450.4777	500.4900	0.1002
Debt servicing	1.5212	450.4777	500.4900	1.3692
Return on Equity	0.6856	450.4777	500.4900	0.6170

10.4 Working Capital Cost- Operation on RFO

For ease of reference the related paragraph of the Determination of 27.01.2016 has been reproduced as hereunder:

54. The petitioner was allowed a working capital component of Rs 0.1213/kW/h which is required to be adjusted at the time of first fill of inventory and subsequently with KIBOR variation. However, no such adjustment formula was prescribed for working capital component adjustment. Therefore, it has been decided to clarify the adjustment related to the cost of working capital component. Based upon the assessed working capital requirement of Rs 4,149.69 million on RFO operation, while taking base KIBOR of 8.53% + 200 points spread and RFO price of Its 38,265/ ton, the cost of working capital component has been assessed at Its 436.96 million or Rs. 0.1213 per kW per hour. This cost shall be adjusted according to the actual prices prevailing at the time of first fill along with the actual KIBOR rate at the time COD. This component shall be quarterly or biannually adjusted as the case may be, with 3 months or 6-month KIBOR post COD.

The comparison of assessed and actual working capital cost on RFO operations has been shown in the table below:

	Assessed	Adjusted
		Jul. 2017
NEO (GWh)- RFO	3,602.31	3,602.31
RFO price (PKR/M.T.)	38,265.00	41,611.39
RFO Qty (M.T.)	108,446	108,446
Amount assessed (Mln.Rs)	4,149.69	4,512.59
6 Month KIBOR	8.53%	11.25%
Margin	2.00%	2.00%
Interest rate	10.53%	13.25%
Working capital cost	436.96	597.92
W. Capital charge (Rs/kWh)	0.1213	0.1660

For revised RFO price and 6M KIBOR rate, NEPRA is therefore, requested to allow adjustment in Reference Tariff for working capital cost-on RFO operation which translates into PKR/kW/h 0.1660.

9.5 Insurance Cost Component

For ease of reference the related paragraph of the Determination of 14.04.2015 has been reproduced as hereunder:

84. According to the petitioner, insurance components consist of all risk insurance / reinsurance for the Project as well as business interruption insurance which are a lender stipulated requirement. The petitioner has requested PKR 0.1258/kW/h as insurance component which has been assumed at 1.35% of the requested EPC price. Since no insurance agreement has been provided the Authority decided to use the benchmark 1.35% of EPC cost as insurance cost on the allowed EPC of USD 306.54 million to work out the insurance component of PKR 0.1183 per kW per hour, which will be subject to adjustment at actual, maximum of 1.35% of then EPC approved cost at the time of COD.

As per para # 67 of the Determination of 27.01.2016, the actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser not exceeding 1.35% of the EPC cost will be treated as pass-through. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by NPGCL.

The insurance cost @ 1.35% of adjusted EPC cost of Rs 32,683 million works out as Rs 441.22 million per annum which translates into cost of Insurance charge as Rs 0.1225/kWh on RFO operation and Rs 0.1118/kWh on gas operation, the same is requested to allow in the revised Reference Tariff.



Section 11 Performance Test & Fuel Cost Component

11.1 Brief History

In the first Tariff petition filed by NPGCL for CCPP Nandipur on 20.05.2014, Net Capacity (MW) and Net Efficiency (%) as requested by petitioner and allowed by NEPRA on 14.04.2015 are tabularized as below;

Description	Requested by Petitioner in first Tariff Petition (20.05.2014)	Allowed by NEPRA in first Tariff determination (14.04.2015)
Fuel: RFO		
Net capacity (MW)	411.351 MW	411.351 MW
Net Efficiency (%)	44 %	45 %
Fuel: Gas		
Net capacity (MW)	447.672 MW	Not Allowed
Net Efficiency (%)	48 %	Not Allowed

Being aggrieved by the decision of the Authority, NPGCL filed a review motion on 24.04.2015 and was disposed by NEPRA on 27.01.2016. Brief is as under;

Description	Requested by Petitioner in Review Tariff Petition (24.04.2015)	Allowed by NEPRA in Review Tariff determination (27.01.2016)
RFO Only		
Net capacity (MW)	411.351 MW	411.351 MW
Net Efficiency (%)	44 %	45 %
Gas/RLNG Only		
Net capacity (MW)	447.672 MW	506.21 MW
Net Efficiency (%)	48 %	49%
Gas & HSFO (Intermittent)		
Net capacity (MW)	-	450.4777 MW
Net Efficiency (%)	-	49%

11.2 COD and Completion of Gas Conversion works

The GTs and CCPP achieved Commercial Operation on various dates as tabulated below;

Unit	Make	Commercial Operation Date	Fuel Type
GT-1	GE, USA	20-05-2015	HSFO / HSD
GT-2	GE, USA	27-03-2015	HSFO / HSD
GT-3	GE, USA	06-12-2014	HSFO / HSD
ST-4	DECL, China	23-07-2015	Steam

Operation of CCPP plant on RFO/HSD alone : From COD to 08.05.2017
 Intermittent Operation duration (Both Fuel/Pre-select load) : 08.05.2017 to 06.10.2017
 Operation of Plant on Gas/RLNG alone (on Base Load) : w.e.f. 06.10.2017
 Performance testing carried out date : 08.04.2019

11.3 Initial Performance Testing i.e. Dependable Capacity and Heat Rate of Nandipur Plant on Gas Fuel (RLNG)

NPGCL carried out the Initial Performance Testing of Nandipur Complex on Gas Fuel (RLNG), soon after the completion of Gas conversion works but due to various reasons as outlined below. However, the base load of the Nandipur Complex achieved on 11.03.2019 and the performance testing managed on 08.04.2019;

- Handing over of plant to O&M operator.
- Delay in performing maintenance activities as per initial period of 3 months of handing over of plant by O&M operator due to non-allowing shutdown by NPCC.
- Non provision of RLNG by Gas supplier. (SNGPL) due to non-availability.

All the stake holders including NEPRA, CPPA-G and NPCC were invited accordingly to participate in the process. The Performance Tests i.e. Dependable Capacity and Heat Rate were carried out on 08.04.2019 in line with the PPA.

11.4 Performance Testing Results on Gas Fuel (RLNG)

Performance Test i.e. Dependable Capacity and Heat Rate were performed by the Operator on 08th April, 2019 by independent engineer in the presence of teams from NPGCL and Consulting Engineer i.e. M/s. NESPAK.

The performance test report has been duly reviewed & certified by the Consulting Engineer, M/s. NESPAK. As per the Performance Report, the Dependable Capacity and Heat Rate (LHV) and Efficiency (LHV) have been determined as below at the time of test (08.04.2019):

DATE: 08.04.2019					
Capacity (MW)		LHV Heat Rate (KJ/kWh)		LHV Efficiency (%)	
Gross Capacity	Net Capacity	Gross Heat Rate	Net Heat rate	Gross Efficiency	Net Efficiency
505.592	492.772	7227.19	7415.210	49.812	48.549

After incorporation of degradation factor by degradation curves duly vetted by the Engineer M/s. NESPAK, the performance parameters attributed towards COD of Nandipur Complex on Gas Fuel (RLNG) i.e. 08.05.2017 are calculated as below:

DATE: 08.05.2017					
Capacity (MW)		LHV Heat Rate (KJ/kWh)		LHV Efficiency (%)	
Gross Capacity	Net Capacity	Gross Heat Rate	Net Heat rate	Gross Efficiency	Net Efficiency
513.511	500.490	7,152.912	7339.000	50.329	49.053

11.5 Net Efficiency and Capacity of Plant (New Plant WITHOUT ONE-TIME ADJUSTMENT)

Keeping in view of above explanation, following Net LHV efficiency and Net Capacity of the CCPP Nandipur achieved on Date of Commissioning of Plant on respective fuels are as under;

Description	Requested Values Based Upon Testing of Plant WITHOUT ONE-TIME ADJUSTMENT (New Plant)
RFO alone On COD (23.07.2015)	
Gross capacity (MW)	425 MW (New Plant)
Net capacity (MW)	411.351 MW (New Plant)
Net Efficiency (%)	44.94 % (New Plant)
Gas/RLNG On Gas conversion (08.05.2017)	
Gross Capacity (MW)	513.511 MW (New Plant)
Net capacity (MW)	500.490 MW (New Plant)
Net Efficiency (%)	49.053 % (New Plant)
Gas/RLNG & HSFO Intermittent Operation (08.05.2017 to 06.10.2017)	
Gross capacity (MW)	464.410 MW
Net capacity (MW)	450.4777 MW
Net Efficiency (%)	47.00 %

As it is not logically possible to attain the same efficiency of 49% at 450.4777 MW net load and 500.490 MW net load, therefore the efficiency for intermittent operation is taken as 47.00% and 46.53% for FCC calculation after one-time adjustment; based upon linear relation between Net Capacity and Efficiency of plant on both Fuels i.e. RFO and Gas/RLNG.

11.6 One-time adjustment of Complex Efficiency

During performance testing of the plant operational parameters have been measured, while there are various factors which contribute towards heat loss and cannot be measured during plant performance testing. As per Generally Accepted Engineering Practices, international standards and NEPRA practice, one-time adjustment is allowed for various factors contributing towards heat rate loss during normal operation of the plant for which adjustments have been proposed by the independent engineer and outlined below:

- Recoverable and non-recoverable adjustment
- Blow down adjustment
- Ambient temperature adjustment
- Miscellaneous adjustment



The point wise adjustments being requested as above are explained hereunder:

i) Recoverable and Non-Recoverable (permanent) degradation

As per OEM degradation curve, the efficiency loss starts from the day first, of plant operation (based on OH (operating Hours) / FFH (Factored Firing Hours)) and accumulates until the end of the first operating year, whereas allowed degradation is applied for the next operating year. Therefore, one-time adjustment for accumulative degradation for the first year may be allowed as an international practice.

ii) Blow downs and Drains

During normal operation of plant, continuous blow downs (CBD) remains open whereas intermittent blow downs are opened as and when required. Further sampling points for taking samples for checking water/steam quality are opened for considerable time before sample(s) collection which ultimately contributes to heat loss. However, during performance testing, all such drains including CBD and isolation valves are required to be closed as per applicable standards. Therefore, one-time adjustment for efficiency loss due to blow down closure and sampling lines may be allowed.

iii) Ambient temperature

The Average Monthly Ambient Temperature at Nandipur is 30 °C which is same as the reference ambient of 30 °C. No correction is applicable. Means that onetime Adjustment on efficiency for ambient temperature variation is 0%.

iv) Efficiency adjustment due to miscellaneous factors

Following are the factors which also lead to efficiency loss and require one-time adjustment;

- System Frequency variation
- Plant trips due to system disturbances/faults,
- Start/Stop of plant
- Plant operation on closed cycle circulating cooling water system which contribute towards efficiency loss
- Higher Auxiliary Consumption during summer due to higher ambient temperature

The calculation of One Time Adjustment of Complex Efficiency was managed from the EPC Gas Conversion Contractor for allowing the same by NEPRA, as under;

i)	Recoverable and non-recoverable adjustment	=	0.181 %
ii)	Blow down adjustment	=	0.180 %
iii)	Ambient temperature adjustment	=	0.000 %
iv)	Miscellaneous adjustment	=	0.100 %
	Total One Time Adjustment to Efficiency	=	0.461 %

The document duly verified and endorsed by the Engineer M/S NESPAK is attached.



It is worth to note that NPGCL is seeking 0.461 % one-time efficiency adjustments, based upon above factors, which is less than 0.898% one-time adjustment already allowed by NEPRA in case of UCH-II power plant, in its determination dated 16.10.2009.

11.7 Fuel Cost Component

Keeping in view of above explanation, following Net LHV efficiency the CCPP Nandipur on Date of Commissioning of Plant (23.07.2015) WITH ONE TIME CORRECTION FACTORS are being requested;

Efficiency (%)	Reference Tariff			Modified Reference Tariff		
Energy Blocks	RFO 27.01.2016	RLNG / Gas 27.01.2016/ 29.08.2019	Intermittent 27.01.2016/ 29.08.2019	RFO / HSD	RLNG / Gas	Intermittent
CCPP Nandipur (1~4)	45.000	49.000	49.000	44.4800	48.592	46.536

Heat Rates (Kj/kW/hr)	Reference Tariff			Modified Reference Tariff		
Energy Blocks	RFO 27.01.2016	RLNG / Gas 27.01.2016/ 29.08.2019	Intermittent 27.01.2016/ 29.08.2019	RFO / HSD	RLNG / Gas	Intermittent
CCPP Nandipur (1~4)	8,000	7,347	7,347	8,094	7,409	7,736

Heat Rates (BTU/kW/hr)	Reference Tariff			Modified Reference Tariff		
Energy Blocks	RFO 27.01.2016	RLNG / Gas 27.01.2016/ 29.08.2019	Intermittent 27.01.2016/ 29.08.2019	RFO / HSD	RLNG / Gas	Intermittent
CCPP Nandipur (1~4)	7,582	6,963	6,963	7,671	7,022	7,332

Based upon the aforesaid net LHV efficiency, Revised Reference fuel cost component has been requested:

Fuel Cost Component (Rs/kW/hr)				Reference Tariff			Modified Reference Tariff w.e.f. COD		
Energy Blocks	RFO	RLNG / Gas	Intermittent	RFO / HSD	RLNG / Gas	Intermittent			
	27.01.2016	27.01.2016/ 29.08.2019	27.01.2016/ 29.08.2019						
CCPP Nandipur (1~4)	7.5246	7.3803	7.3803	7.6126	7.4423	7.7711			
References Values	Reference			Reference					
Fuel Calorific Values (CV)	RFO	RLNG	GAS	RFO/HSD	RLNG	GAS			
HHV/ LHV factor		1.107553	1.107553		1.107553	1.107553			
RFO (BTU per K.g)	38,557.80			38,557.80					
Gas/RLNG (MMBTU/cft)		1,000	1,000		1,000	1,000			
Fuel Prices (HHV)									
RFO/HSD (Rs/M.T)	38,265.00			38,265.00					
RLNG/Gas(Rs/MMBTU)		956.97	956.97		956.97	956.97			

Section 12 Part Load Adjustment Charges, Degradation Factor and Start-up Charges of Plant

12.1 Partial Loading Correction Table for Heat Rate on RFO/HSD

The EPC Contractor M/S DECL had developed and provided the CCPP Partial Load Curve on RFO/HSD, Output vs Heat Rate, which is attached.

From the aforementioned EPC document, the Heat Rate Correction Factor Table for CCPP Part Loads, has been developed; as under,

% Load	Correction Factor (HSD/HSD)
100.0000	1.0000
85.9729	1.0027
81.4480	1.0129
72.3982	1.0437
67.8733	1.0642
63.3484	1.0898
54.2986	1.1539
50.6787	1.1860

12.2 Partial Loading Curves/Correction Tables on Gas Fuel (RLNG):

Based upon curves provided by the EPC Gas Conversion Contractor and duly verified/endorsed by NESPAK, the tables for Partial loading on Gas fuel are as below for different combinations of the operation of machines.

a) 3 Gas Turbines + 1 Steam Turbine

Load % age	Correction factor for net Heat Rate
100	1.00000
95	1.00035
90	1.00596
85	1.01650
80	1.03141
75	1.04870
70	1.06815
65	1.08985
60	1.11652
55	1.14800
50	1.18255



b) 2 Gas Turbines + 1 Steam Turbine

Load % age	Correction factor for net Heat Rate
66	1.00687
65	1.00881
60	1.01819
55	1.03650
50	1.06400
45	1.09505
40	1.13152
35	1.17537
30	1.22400

c) 1 Gas Turbines + 1 Steam Turbine

Load % age	Correction factor for net Heat Rate
30.75	1.05042
30	1.05506
25	1.09400
20	1.17165
15	1.29200

12.3 Complex Degradation Curve/Degradation Table

The impact of Degradation has already been allowed by NEPRA; however, the curves have been developed by the EPC Gas Conversion Contractor for claiming the Degradation Adjustment. The Contractor has developed the Degradation Curves/Degradation Table of the Complex, based on Curves of OEM, each for Gas Turbine and Steam Turbine. The complete document duly verified and endorsed by the Engineer M/S NESPAK is attached. The same is requested to be allowed.

12.4 Startup charges:

Startup costs (Reference) has been calculated against all the three configurations of the plant. The cost will cover the consumables, fuel and equivalent operating hours consumed for the start up. This cost will be based on the following table and shall be indexed as per in vogue procedures set by NEPRA. The detailed working is attached.

ABSTRACT OF REFERENCE STARTUP COSTS AT COPP NANDIPUR			
Configuration	3+1	2+1	1+1
Cold Start up Charges PKR	5,401,674.	3,624,147.	1,789,118.
Warm Start up Charges PKR	3,965,812.	2,666,064.	1,310,06.9
Hot Start up Charges PKR	2,529,951.	1,707,951.	831,019.

Section 13 Pre-COD operating Cost

Since commissioning, NPGCL is operating the CCPP Nandipur during pre-COD period on the request of power operator and raising the power sale invoices at the rate determined by NEPRA from time to time. From May 2014 to Jul 2015 NEO of 328.204 GWh was delivered to national grid from CCPP Nandipur. NPGCL raised invoices of PKR6,765.091 million including GST of PKR982.962 million to CPPA. The details of power sale rates during pre-COD period have been attached. The CPPA-G is not verifying the claims on the ground that NEPRA has not yet determined power sale rates during pre-COD period.

NEPRA is therefore, requested to approve power sale rates for pre-COD period to resolve the matter.



Section 14 Indexations

- a. Reference Gas/RLNG price of Rs. 956.97/MMBtu. **Fuel Cost Component (FCC)** shall be adjusted in accordance with the price variation of the fuel consumed at the new price of Gas/RLNG- to be notified by the competent Authority/OGRA adjusted for HHV-LHV factor of 1.107553.
- b. Under the provisions of Long-term O&M Contract with M/s Hydro Electric Power System Engineering Co. Ltd., the contractor will raise Fixed/ Commercial Invoices (on monthly basis) and Event Based Invoices, calculated on the basis of applying the exchange rate and indexation rates applicable on the 1st day of relevant month of payment. Therefore, the local component of **Fixed O&M** and **Variable O&M** shall both be monthly indexed to the WPI (Manufacturing) as notified by the Pakistan Federal Bureau of Statistics, whereas the both the foreign components of the above shall be indexed to (a) the US CPI issued by the US Bureau of Labour Statistics, and (b) the USD / PKR exchange rate based on the revised TT & OD selling rate of USD as notified by the National Bank of Pakistan.
- c. **Cost of Working Capital** component of the reference generation tariff shall be indexed to (a) change in FCC due to fuel price variations, and (b) the 3 Month KIBOR rate as notified by the State Bank of Pakistan.
- d. The tariff component, **Return on Equity**, shall be quarterly indexed to the USD / PKR exchange rate based on the revised TT & OD selling rate of USD as notified by the National Bank of Pakistan.
- e. The **Cost of Insurance**: As per para# 67 of the Determination of 27.01.2016, the actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser not exceeding 1.35% of the EPC cost will be treated as pass-through. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by NPGCL.
- f. The **Debt Servicing** cost component shall be adjusted in accordance with the applicable indexations of the 6 Month KIBOR rate (or another benchmark as applicable).




Section 15 General Assumptions

In addition to the assumptions made in this document above, the following general assumptions have been taken into account for the computation of the Petitioner's generation tariff. Any changes in these assumptions shall result in a change to the tariff proposed in this document.

- a. Auxiliary consumption is 13.649 MW on RFO/HSD Operations and 13.02 MW on Gas/RLNG Operations.
- b. A constant ROE is assumed, which results in an IRR of 15% over 30 years.
- c. No hedging cost has been assumed for exchange rate fluctuations during construction.
- d. The tariff is calculated on the basis of a notional 60% plant factor for RFO and 90% plant factor for RLNG.
- e. Working capital has been financed by a separate working capital arrangement, and is not included in the Project cost.
- f. 100% local debt is procured.
- g. Reference US CPI 234.722
- h. Reference PAK CPI 195.13
- i. PKR to US Dollar exchange rate 103.0

Section 16 Privatization of CCPP Nandipur

This is to inform the Authority that, Nandipur plant of NPGCL is part of the privatization program of Government of Pakistan (the "GOP"). The privatization process is currently underway with the GOP having engaged advisors who are undertaking the required seller's due diligence and transaction structuring tasks therefore, NPGCL may file application to the Authority subsequently for further modification of Reference Tariff if required.

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Section 17 Determination Sought

The learned Authority is kindly requested to approve the Company's requested modified Reference Tariff, along-with the pertinent adjustments, indexations, in accordance with the parameters & assumptions mentioned above. The Petitioner would be pleased to provide any further information, clarification, or explanation that may be required by the Authority during its evaluation process.



Annexures and Appendices

A. Schedule of Annexures

1. Bank Draft bearing No. BBB 14035534 drawn on Allied Bank Limited Muzaffargarh dated-17-06-2020 for PKR 1,713,408 as tariff petition filing fee.
2. Copy of BOD resolution approving filing of tariff petition in NEPRA.
3. Affidavit signed by Engr. Sabeeh-Uz-Zaman Faruqi, Chief Executive Officer of NPGCL.

B. Schedule of Appendices

1. Details of EPC invoices for actual payments against assessed EPC payable amount with documentary evidences.
2. Operation and Maintenance Contract
3. Detail of actual expenses against assessed amount of spare parts.
4. Purchase contract for BOP spare parts and details of actual expenses
5. Details of payments for land development and buildings expenses.
6. Detail of fuel consumed during testing.
7. Details of expenses for power dispersal verified by NTDC
8. Details of expenses for conversion of plant on gas
9. Details of expenses for constructing gas infrastructure/ Pipe lines verified by SNGPL
10. Inspection & repacking expenses details.
11. Details of invoices for Pre-COD fuel cost.
12. Performance test Reports of the Initial Dependable Capacity and Heat Rate, verified by the Consultant/Engineer.
13. Audited & Reviewed Financial Statements for FY 2018-19 together segment wise fixed asset schedule of CCPP Nandipur.
14. Bank statements & bank advices to support actual payments
15. Copies of Goods Declarations of Pakistan Customs, Payment Challans of Taxes & Duties reconciled with contractors' invoices, Copies of Bills of Lading etc.
16. Agreement with Insurance Company.
17. Calculation of the performance parameters attributed towards Gas Conversion of the plant.
18. Calculation of One Time Adjustments of Efficiency of Power Complex
19. Tables of technical parameters for start-up cost
20. PLAC cost
21. Plant degradation curves.

Note: Copies of appendices are contained in the separate folders.

