ORDER OF THE

WEST BENGAL ELECTRICITY REGULATORY COMMISSION

IN CASE NO. OA-338/20-21

IN REGARD TO THE APPLICATION SUBMITTED BY HALDIAENERGY LIMITED (HEL) FOR IN-PRINCIPLE APPROVAL OF CAPITAL EXPENDITURE FOR INSTALLATION OF LIMESTONE BASED WET FLUE GAS DESULPHURIZATION PLANTFOR 2 X 300MW COAL BASED THERMAL POWER PROJECT AT HALDIA

PRESENT:
SRI SUTIRTHABHATTACHARYA, CHAIRPERSON
SRI DURGADAS GOSWAMI, MEMBER
SRI PULAK KUMAR TEWARI, MEMBER

DATE: 20.01.2022

FACTS IN BRIEF

1.0 This is in regard to the Petition submitted by Haldia Energy Limited (HEL), on 15th July, 2020 for In-principle approval of capital expenditure in the 1st stage for the installation of Limestone based Wet Flue Gas Desulphurization Plant (FGD application) for an amount of Rs. 534.95crore in respect of 2x300 MW coal based thermal power project set up by Haldia Energy Limited at Haldia, Midnapore (East), West Bengal in terms of regulation 2.8.4.1 (iii) and 2.8.4.2 of the West Bengal Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2011 (in short "Tariff Regulations").

2.0 The petition is for compliance with the Environment (Protection) Amendment Rules, 2015 dated 7 December 2015 (hereinafter referred to as "Amendment Rules, 2015")notified by the Ministry of Environment, Forest and Climate Change (MoEFCC), specifying new standards of compliance for the thermal power plants with respect to emission of pollutants into the atmosphere.

3.0 The petition was admitted by the Commission on 13.11.2020. On admission of the FGD application, HEL was directed to publish the gist of the FGD application, as submitted by HEL and approved by the Commission. Accordingly, the gist was published simultaneously on 02.12.2020 in 'Times of India', the 'Bartaman', the 'EiSamay' and the 'Sanmarg'. The publication requested for submission of suggestions and objections from the members, if any, on the application to the Commission by 22.12.2020. The approved gist along with the FGDapplication was also published in the website of HEL. Opportunities were also afforded to all to inspect the application and take copies thereof but no suggestion and objection is received within due date.

4.0 In the said application, HEL has inter-alia stated the following:

4.1 The Petitioner commissioned Unit 1 of the Power Station on 28 January 2015 and Unit 2 on 21 February 2015. The Ministry of Power (MoP) in consultation with the Central Electricity Authority (**CEA**) decided that in order to meet the new SO_2 emission norms FGD Systems shall be required to be installed in all the plants for complying with the new standards. As per direction of MoEFCC, the Central Pollution Control Board (hereinafter referred to as the

"**CPCB**"),vide its communication dated 11 December 2017 issued the directions to HEL to install FGD by December 2022 in unit 1 & 2 respectively so as to comply SO_2 emission limit, to install ESP to meet emission limit of PM, to take immediate measure like installation of low NOx burners, providing Over Fire Air (OFA) etc. and achieve progressive reduction so as to comply NOx emission limit by the year 2022.

4.2 In its communication to the CERC, containing the said directions, the MoP clarified that the Amendment Rules, 2015 qualifies as an event under 'Change in Law' in respect of the PPAs between generating companies and distribution licensees as well as it advised that affected thermal power plants may approach the Appropriate Commission for approval of additional capital expenditure on account of such Change in Law.

4.3 The existing infrastructure of HEL's Power Station not being adequate to meet the norms pertaining to SO_2 as per Amendment Rules, 2015 it is now obligatory for the Petitioner to modify the existing emission control system with installation of requisite technology of FGD System in the Power Station within the deadline for adhering to the desired level of SO_2 in flue gas emission. Therefore, the Petitioner will be required to incur substantial capital expenditure for installation of such FGD System and associated equipment for which the Petitioner is approaching the Hon'ble Commission seeking approval of the expected capital expenditure and other associated costs.

4.4 The emission levels of Particulate Matter (PM) and Mercury for the Power Station at present are within the limits of Amendment Rules, 2015 but the Petitioner may be required to incur further capital expenditure on NO_X abatement systems after identification of suitable mitigation technology through recommendation of CEA to meet the norm regarding NO_X.

4.5 After consideration of factors like availability of reagent, adequate references of applicability to coal based power plants, efficiency of SO_2 removal, operational requirement, space, layout feasibility, raw material availability, by-product disposal and estimated life cycle cost analysis in the feasibility report, limestone based Wet FGD technology (WFGD) is proposed with estimated timeline of 24 months.Copy of Feasibility Report for installation of FGD for 2 x 300

MW Thermal Power Plant of HEL prepared by Fichtner Consulting Engineers (India) Pvt Ltd has been submitted with the petition as per Regulation 2.8.4.2.1.

4.6 The salient technical features of the proposal are as follows:

a) Limestone based Wet FGD technology with dedicated absorber for each unit and a common twin flue wet stack without Gas-to-Gas Heater for both the units.

b) Some major systems / equipment are required to be retrofitted.

c) New Pre-treatment and Ultrafiltration-Reverse Osmosis system (PT-UF-RO) will have to be installed considering higher salinity of the influent water to meet WFGD make up water and gypsum cake wash water requirement. Otherwise, process water for both units would be sourced from the existing plant water system after necessary augmentation.

d) Adequate land for the selected technology and configuration is available for installation of the proposed FGD technology and its auxiliaries.

e) Civil piling foundations have to be considered for all major load bearing foundations of FGD installationas sub soil is soft and ground water level is high.

f) The design and construction of structures shall be required to be cyclone resistant particularly for taller structures like chimney as the power station is located in a high cyclone risk zone.

g) High Seismic design and construction of earthquake resistant structures for all FGD related structure including chimney with corresponding additional expenses is required as the station is located in high damage risk zone with respect to earthquakes.

h) Power source for FGD plant will be taken from existing station boards located at the main TG building. 2 x 100% DG sets have been conceived to provide reliable power to all emergency equipment. Auxiliary Energy Consumption of Wet FGD System for each generating unit will be about 1.20% of installed capacity at full load.

i) C&I System is considered including FGD PLC system connected with existing Main Plant DCSthrough Optical Fibre Cable (OFC) and other communication cables.

4.7 The entire process of installation and commissioning of FGD System at the Power Station would take around 24 months subject to the conditions that additional time is not required as per actual working conditions at site particularly during the monsoons.

4.8 The total Capital Cost towards the proposed Wet FGD System implementation is estimated to be Rs. 534.95 Crore including Initial Spares (estimated as per Tariff Regulations), Taxes & Duties, Insurance, Interest During Construction (hereinafter referred to as "IDC"), Pre-operative Expenses and Financing Charges. As per HEL, the Capital Cost of the FGD System has been envisaged based on the present market rates and such estimates may differ from the actual expenditure made later based on the prices discovered through competitive bidding. The detailed break-up of the Capital Cost of the Wet FGD system proposed for the 2 x 300 MW Units of the Power Station as estimated by the Petitioner based on the Feasibility Report prepared by FIPL is shown in the following Table.

Particulars	Annotation	Rs. Crores
Base Capital Cost		
FGD Main System including General Civil Works and C&I System	a	306.50
Mechanical BoP (HVAC, FPS system)	b	19.01
PT-RO System	c	25.56
Waste Water Treatment Plant	d	2.88
Erection, Testing and Commissioning (including Site Development and Enabling Works)	e	32.72
Contingency	f	4.74
Initial Spares (@2.5% of Total Project Cost as per	g = q*2.5%	13.37

Particulars	Annotation	Rs. Crores
Tariff Regulations)		
Total Base Capital Cost of FGD Plants	**h = sum (a:g)**	**404.78**
Soft Capital Cost		
Taxes & Duties (GST @18% of Total Base Capital Cost)	i = h*18%	72.86
Insurance (@1% of Total Base Capital Cost)	j = h*1%	4.05
Pre-operative expenses (@1.5% of Total Base Capital Cost)	k = j*1.5%	6.07
IDC (@Rate of Interest 10.50%)	l	41.16
Financing Charges (@1.5% of Loan)	m = o*75%*1.5%	6.02
Total Soft Capital Cost of FGD Plants	**n = sum (i:o)**	**130.16**
Total Capital Cost of FGD Plants	**o = h + n**	**534.95**

4.9 HEL, vide letter dated 02.03.2021, has furnished the communication from CEA dated 24.02.2021 where the Authority has advised the generator that they are in the process of reviewing its guidelines on Project Cost and Technology considering that present bid out prices of such FGD systems are generally higher compared to its guidelines issued three years ago. This is also clarified in the said communication of CEA that the CAPEX was "Base Cost" only with new Chimney and without GGH and does not include Taxes-Duties and Opportunity cost for interconnection.CEA has also recognized that the cost of FGD has increased in resent time due to sudden demand of FGD equipment, shortage of indigenous manufacturing capacity, import restriction from prior preference country etc.

4.10 HEL has now submitted through a petition dated 13.12.2021 that considering the stringent timeline for installation of WFGD system, they invited the tender for international competitive

bidding (ICB) for the investment on 18.01.2021 in three widely circulated daily newspaper viz. India Express (Kolkata, New Delhi, Mumbai), (b) The New India Express (Chennai), (c) Financial Express (Kolkata, New Delhi, Mumbai, Chennai).In response to the said Notice Inviting tender (NIT), eight parties purchased Bid Documents . However, finally only three parties had submitted their price bids for the proposed scope of works. The competitive bidding was conducted only for Engineering, Procurement and Construction (EPC) i.e it consisted of Hard Costs, Taxes and Duties and Insurances only for the FGD system. Other costs like preoperative expenses, expenses towards enabling works, soft cost like financing charges, interest during construction were not covered under the bidding.

4.11 The discovered cost comprising hard costs, taxes and duties and insurances discovered in the bid are as follows:

Name of the Vendor	Total Cost	Cost per MW
BHEL :	Rs 1117.58 Cr	Rs 1.86 Cr /MW
SEC :	Rs 1037.46 Cr On-shore Plus USD 57595096.00 Off-shore Total Rs 1460.74 Cr with conversion rate of Rs 73.4927 for 1USD	Rs 2.435 Cr/ MW
TECNO :	Rs 885 Cr	Rs 1.475Cr /MW

4.12 After negotiation with the lowest bidder to reduce its quoted price HEL received a final quote (inclusive of hard cost, taxes and duties, insurance) from the lowest bidder which is Rs. 825 cr. i.e. Rs. 1.375 Cr./MW.There will be other soft cost like pre-operative cost, enabling works and contingencies totaling of Rs. 0.043 Cr./ MW. which translate the total capital cost at Rs. 1.418 Cr./MW (Rs 1.375 Cr/MW + Rs 0.043 Cr/Mw) excluding the cost of financing and interest during construction (IDC). Thus, the total capital expenditure that will required to be

incurred other than financing cost and interest during construction (IDC) are as follows:

Description	Amount (Rs. Crore)	Rs Crore per MW
Total EPC cost in the scope of the lowest bidder. (Includes hard cost, taxes and duties and insurance)	825.00	1.375
Other estimated cost like pre-operative expenses, enabling works and contingencies	25.75	0.043
Total capital expenditure requirement requirement other than financing cost and interest during construction (IDC)	850.75	1.418

4.13 In their petition dated 13.12.2021 HEL has referredletters from CEA dated 30.06.2021 and 07.09.2021 regarding conformity communication of the power plant of Dhariwal Infrastructure Ltd. (DIL) wherein CEA acknowledgedbythat capital cost of wet lime stone based FGD has increased recently due to various reason like limited vendor, raise in cost of input materials like steel, cement etc. and also advised DIL to discover the cost of FGD plant required to be installed through competitive bidding. HEL has also submitted that various items of cost as considered by CEA vis-à-vis the capital cost submitted by HEL in its petition have material differences which also significantly contributed to the difference between the capital cost indicated by CEA and capital cost projected by HEL. HEL has also submitted that due to poor soil condition as may be shown from the soil investigation report they need extra piling which results extra civil cost. HEL has also submitted that CERC has allowed additional cost on aacount of piling foundation works for FGD installation for some other thermal power plant.

4.14 HEL has also submitted a copy of the order dated 28.09.2021 passed by CERC on the petition No 597/MP/2020 in matter of NTPC SAIL Power Company Limited vs DNH Power Distribution Corporation Limited &anrs wherein the cost discovered through a competitive bidding process was accepted by CERC though significantly higher than the indicative cost

recommended by CEA. Moreover, cost other than hard cost were proposed to be considered on case to case basis at alater stage. In the said order CERC has accorded 'in principle approval' to the claimed hard cost of Rs 72.45 lakh/MW towards installation of WFGD system to meet emission control norms for SO2 and claimed cost of Rs 14 crore (without IDC) towards Combustion Modification System to meet emission control norms for NOx

4.10 HEL has now prayedbefore the Commission to:

(a) Take the petition dated 13.12.2021 alongwith documents filed alongwith it on record;

(b) Consider the final price of Rs 825 Crore i.e Rs 1.375 Crore per MW discovered through competitive bidding process for the FGD system as the benchmark price for granting in-principle approval towards EPC cost including taxes and duties, and insurances;

(c) Accord in-principle approval to the Capital Cost of the FGD System at the the benchmark price of Rs 825 Crore i.e Rs 1.375 Crore per MW towards EPC cost including taxes and duties, and insurances subject to finalization based on actual cost incurred by them;

(d) Accord in-principle approval to the Capital Cost other than the EPC cost comprising pre-operative expenses, enabling works and contingencies as estimated to the tune of Rs 25.75 Crore, i.e Rs 0.043 Crore per MW, subject to finalization based on actual cost incurred by them

(e) Allow appropriate Financing Charges and Interest during Construction (IDC) at alater stage;

(f) Pass such other or further order(s) as the Commission may deem fit in the facts and circumstances of the case.

OBSERVATION OF THE COMMISSION

5.0 The Commission has observed that the Base Capital cost of the proposal is Rs 1.375 Crore /MW (Rs 825 Crore / 600 MW).

6.0 The indicative CAPEX of CEA is 43.5 lakh /MW for 300/330 MW units discovered through open competitive bidding for the projects already awarded. It has been clarified in the communication dated 24.02.2021 on review of guidelines on FGD project cost for different MW size size units that CAPEX is "Base Cost" only with new Chimney and without GGH and does not include Taxes-Duties and Opportunity cost for interconnection.

7.0 Central Electricity Authority (CEA) vide its communication dated 24.02.2021 has also advised the generators that CEA is in the process of reviewing its guidelines on Project Cost and Technology considering that present bid out prices of such FGD systems are generally higher compared to its guidelines issued three years ago.

8.0 However, no further guidelines on indicative hard cost has been issued by CEA.

9.0 It is also observed that the quoted hard cost by the lowest bidder is even much more than the hard cost of Rs 72.45 lakh/MW claimed by NTPC-SAIL Power Company Limited for which 'in principle approval' has been accorded by CERC.

10.0 Installation of FGD system is required to be established by HEL in compliance with the Environment (Protection) Amendment Rules, 2015 notified by the Ministry of Environment, Forest and Climate Change (MoEFCC), specifying new standards of compliance for the thermal power plants with respect to emission of pollutants into the atmosphere.

ORDER

11.0 In view of above HEL is directed to review the entire process towards optimization of cost keeping in mind the compliance of the Environment (Protection) Amendment Rules, 2015 notified MoEFCC and the timeline mandated in the notificationdated 31.03.2021issued by MoEFCC.

12.0 Let a copy of this order be served upon Haldia Energy Limited.

sd/-	**sd/-**	**sd/-**
PULAK KUMAR TEWARI	DURGADAS GOSWAMI,	SUTIRTHA BHATTACHARYA
MEMBER	MEMBER	CHAIRPERSON

Date: 20.01.2022

sd/-
SECRETARY