CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 119/GT/2023

Coram:

Shri Jishnu Barua, Chairperson
Shri Ramesh Babu V, Member
Shri Harish Dudani, Member

Date of Order: 18th March, 2025

In the matter of:

Petition for determination of tariff on installation of various Emission Control Systems at National Capital Thermal Power Station, Dadri Stage-I (840 MW), in compliance with the Revised Emission Standards.

And

In the matter of:

NTPC Limited,
NTPC Bhawan, Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110 003 **.....Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg, Lucknow-226 001

2. Rajasthan Urja Vikas Nigam Limited
(*on behalf of DISCOMs of Rajasthan*),
Vidyut Bhawan, Janpath, Jaipur-302 005

3. Gujarat Urja Vikas Nigam Limited
Vidyut Bhavan, Race Course,
Vadodara – 390007 **…...Respondents**

Parties present:

Shri Venkatesh, Advocate, NTPC
Shri. Nihal Bhardwaj, Advocate, NTPC
Shri Kartikeya Trivedi, Advocate, NTPC
Shri Harsh Vardhan, Advocate, NTPC
Shri Shivam Kumar, Advocate, NTPC
Shri Kshitij Pandey, Advocate, NTPC
Shri Siddhant Pradhan, NTPC

ORDER

The Petitioner, NTPC Limited, has filed this Petition for the determination of tariff towards the installation of the various Emission Control Systems (ECS) at National Capital Thermal Power Station (NCTPS), Dadri Stage-I (840 MW) (in short 'the generating station') in compliance with the Revised Emission Standards and has sought the following relief(s):

i) *Approve Supplementary Tariff of NCTPS Stage-I for the tariff period from the date of stabilization of the ECS scheme till 31.03.2024;*
ii) *Allow the Petitioner to bill provisional supplementary tariff in the instant station till the Supplementary tariff is finally determined & approved by the Hon'ble Commission to mitigate the future interest burden.*
iii) *Allow the recovery of the cost of reagent consumption through Supplementary Energy Charges from the date of stabilization of the ECS Scheme till 31.03.2024.*
iv) *Allow additional APC of 0.14% in view of ECS installation.*
v) *Hon'ble Commission may be pleased to allow the recovery of unrecovered depreciation in case the station is decommissioned prior to the envisaged life of tariff recovery for the DSI system*
vi) *Direct the beneficiaries of the instant station to not consider the Supplementary energy charge for Merit Order Dispatch.*
vii) *Pass any other order as it may deem fit in the circumstances mentioned above.*

Background

2. On 7.12.2015, the Ministry of Environment, Forest and Climate Change, Government of India (MOEF&CC) notified the Environment (Protection) Amendment Rules, 2015 (MOEF&CC Notification) to mandatorily require all thermal power plants installed and to be installed, like the Petitioner's Projects, to comply with the revised norms as specified in the said notification, as under:

Date of Installation	PM	SO_2	NO_x	Mercury (Hg)
Before 31-12 2003	100 mg/Nm^3	600 mg/Nm^3 for <500MW 200 mg/Nm^3 for >=500MW	600 mg/Nm^3	0.03 mg/Nm^3 for >=500MW
After 01-01-2004 & Upto 31-12-2016	50 mg/Nm^3	600 mg/Nm^3 for <500MW 200 mg/Nm^3 for >=500MW	300 mg/Nm^3	0.03 mg/Nm^3
On or after 01-01-2017	30 mg/Nm^3	100 mg/Nm^3	100 mg/Nm^3	0.03 mg/Nm^3

3. In compliance with the Revised Emission Standards under the said notification, the Petitioner was required to install various ECS in the generating station. Accordingly, in-principle approval was sought by the Petitioner vide affidavit dated 26.4.2017 in Petition No. 98/MP/2017 with regard to the issues relating to the installation of ECS at the generating station, and the said Petition was disposed of vide Commission's order dated 20.7.2018 as under:

> *"46. ……. In all these situations, additional capital expenditure on "change in law or compliance with any existing law" is allowed. Therefore, additional capital expenditure on implementation of the ECS in terms of Notification dated 7.12.2015 shall be admissible after due prudence check, under Regulation 14 of the 2014 Tariff Regulations."*

4. On 7.3.2019, the Commission notified the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2019 ("the 2019 Tariff Regulations"). Thereafter, on 25.8.2020, the 2019 Tariff Regulations were amended to specify the regulatory framework for the determination of the supplementary tariff for ECS, which was effective from 3.2.2021 (the date of publication in the gazette). Pursuant to this, the Petitioner filed Petition No. 414/MP/2020, seeking the approval of additional capitalization to be incurred towards the installation of ECS at the generating station to comply with the Revised Emission Standards. Subsequent to the 1st amendment to the 2019 Tariff Regulations notified on 25.8.2020, the Petitioner shared the proposal to implement the ECS in the generating station. The Commission, vide its order dated 17.11.2021, approved the hard cost of Rs.8.15 lakh per MW towards the installation of the DSI system and provided in-principle approval for the installation of the ECS system implemented at the generating station. As regards the Petitioner's claim for IDC, IEDC, FERV, taxes, and duties & other costs, the Commission, in the said order dated 17.11.2021, observed as under:

> *"98. Taking into consideration that per MW hard cost suggested for FGD system by CEA is indicative in nature; the cost claimed by the Petitioner is discovered through a*

competitive bidding process; the cost recommended by CEA is more than two-three years old; and the CEA has already recognized the need for revising the cost recommended by it earlier, we approve the following hard cost towards installation of WFGD and DSI based FGD system in the subject generating stations/ units for reduction of SO2 emission levels:

Petition No.	***Generating station/unit Capacity (MW)***	***Hard cost of FGD (` in lakh/MW)***
414/MP/2020	*NCTPS-I (4x210)*	*8.15*

99. Besides the hard cost towards installation of WFGD, DSI based FGD system and De-NOx systems, the Petitioner has also claimed IDC, IEDC, FERV, taxes and duties and other costs. As the instant petitions are for "in-principle" approval of ACE towards installation of ECS to comply with the MoEFCC Notification, the Petitioner's claim for the same is not considered in this order and these claims would be considered on case to case basis on the petitions to be filed by the Petitioner for determination of tariff after implementation of ECS as provided under Regulation 29(4) of the 2019 Tariff Regulations."

5. With regard to the prayer of the Petitioner for additional APC, additional water consumption, additional O&M expenses, cost of Reagents, Gross Station Heat Rate (GSHR), and for allowing deemed availability, on account of shutdown for installation of ECS, the Commission in the order dated 17.11.2021 directed as under:

"102. The Petitioner has further prayed for additional APC, additional water consumption, additional O&M Expenses, cost of reagents, Gross Station Heat Rate (GSHR) and allow deemed availability on account of shutdown for installation of ECS under Regulation 76, i.e. Power to Relax of the 2019 Tariff Regulations. Some of the Respondents have raised their concerns on the said prayers of the Petitioner. The Petitioner in the case of TTPS has also prayed to not consider the supplementary variable charge for Merit Order Dispatch. As the instant petition is for "in-principle" approval of ACE towards installation of ECS, we do not deem fit to go into these prayers at this stage and we would consider them in petitions to be filed by the Petitioner under Regulation 29(4) of the 2019 Tariff Regulations after installation of ECS. However, we would like to point out that after filing of the instant petitions by the Petitioner and during the present proceedings, the Commission has introduced a separate tariff stream for ECS by amending the 2019 Tariff Regulations vide the 2020 Amendment Regulations. Accordingly, the Petitioner's prayer for additional APC, additional water consumption and additional O&M Expenses will be considered as per Regulation 49(E)(f), Regulation 35(1)(6) and Regulation 35(1)(7) of the amended 2019 Tariff Regulations respectively. The Petitioner's prayer for allowing cost of reagents, GSHR and deemed availability on account of shutdown will be dealt on a case to case basis on a petition under Regulation 29(4) of the 2019 Tariff Regulations."

6. The thermal stations were stipulated to meet the Revised Emission Standards as per the MOEF&CC notification dated 7.12.2015 within two years of the said notification. Later, as per the CPCB letter dated 11.12.2017, this generating station was mandated to comply with the Revised Emission norms by 31.12.2019. Subsequently, MoEF&CC

vide notification dated 31.3.2021 revised the deadline for meeting the revised norms to 31.12.2022. As per the latest notification dated 5.9.2022, the generating station is required to comply with the revised SO_2 emission norms by 31.12.2024. The DSI-based FGD was installed in the generating station on the following dates:

Units/ Station	COD	25 years from COD	Date of Operationalization of ECS
Unit-I	1.1.1993	31.12.2017	31.12.2019
Unit-II	1.2.1994	31.1.2019	27.12.2019
Unit-III	1.4.1995	31.3.2020	27.7.2020
Unit-IV	1.12.1995	30.11.2020	14.7.2020
Station	1.12.1995	30.11.2020	27.7.2020

7. The Petitioner submitted that the installation and operationalization of the DSI-based FGD system at the units of the generating station faced significant challenges due to a low Plant Load Factor (PLF), escalated by a reduced demand during the Covid-19 pandemic and the power relinquishment by the Respondent beneficiaries (the discoms of Delhi). These issues delayed the stabilization and testing of the system at full load levels, compounded by the nascent stage of the technology and teething problems, such as moisture-induced reagent handling issues. Despite initial compliance with the Emission norms at lower loads, the system required a substantial modification to meet the standards at higher loads. Following are the extended stabilization and rectification compliances, which were progressively achieved for all units:

Units/ Station	Date of Operation (ODe)	Date of compliance of environmental norms at all load levels
Unit-I	31.12.2019	1.8.2023
Unit-II	27.12.2019	3.12.2023
Unit-III	27.7.2020	8.2.2024
Unit-IV	14.7.2020	10.3.2024
Station	14.7.2020	10.3.2024

8. In the above background, the Petitioner has filed the present Petition in terms of the 2019 Tariff Regulations (as amended), claiming the following capital cost and annual fixed charges:

Capital Cost claimed (vide affidavit dated 29.8.2024)

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Opening Capital Cost	11332.40	13526.80	15567.29	17586.12
Add: Addition during the year/period	0.00	0.00	0.00	0.00
Closing Capital Cost	11332.40	13526.80	15567.29	17586.12
Average Capital Cost	**11332.40**	**13526.80**	**15567.29**	**17586.12**

Annual Fixed Charges claimed (vide affidavit dated 29.8.2024)

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Depreciation	1019.92	1224.28	1417.92	1611.18
Interest on Loan	593.17	689.04	785.32	885.36
Return on Equity	494.34	590.06	679.07	767.13
Interest on Working Capital	303.26	575.62	814.02	1048.94
O&M Expenses	40.49	81.47	120.70	160.35
Total	**2451.18**	**3160.46**	**3817.03**	**4472.96**
Landed Cost of Reagent (Rs. /MT)	45341	44895	42863	41698
Supplementary ECR ex-bus (Rs. /kWh)	0.596	0.590	0.563	0.548

Hearing dated 29.4.2024

9. Based on the liberty granted by the Commission to file the amended petition after serving copies to the Respondents with directions to complete pleadings, the Petitioner filed the amended Petition vide affidavit dated 24.5.2024 after serving a copy to the Respondents. None of the Respondents have filed their replies on the same. However, Respondent UPPCL, vide affidavit dated 4.8.2023, had filed its objection to the earlier tariff proposal submitted by the Petitioner.

Hearing dated 11.7.2024

10. During the hearing on 11.7.2024, the Commission, after directing the Petitioner to file certain additional information and the parties to complete pleadings, adjourned the hearing. In response, the Petitioner vide affidavit dated 29.8.2024 has filed the additional

information after serving a copy on the Respondents. However, none of the Respondents have filed their reply to the same.

Hearing dated 30.9.2024

11. During the hearing on 30.9.2024, the learned counsel for the Petitioner submitted that since the pleadings and arguments have been completed, the Commission may reserve its orders in the matter. None appeared on behalf of the Respondents despite notice. Accordingly, the order in the Petition was reserved. Further, the Petitioner, vide its affidavit dated 14.11.2024 submitted the details as sought for by the Commission.

12. Based on the submissions and the documents on record, we proceed to examine the prayer(s) in the Petition, as stated in the subsequent paragraphs.

13. The date of commercial operation (COD) of the unit(s) of the generating station and the date of operation (ODe) of the DSI-based FGD are as under:

Units/ Station	Date of COD	25 years from COD date	Date of Operationalization of ECS
Unit-I	1.1.1993	31.12.2017	31.12.2019
Unit-II	1.2.1994	31.1.2019	27.12.2019
Unit-III	1.4.1995	31.3.2020	27.7.2020
Unit-IV	1.12.1995	30.11.2020	14.7.2020
Station	1.12.1995	30.11.2020	27.7.2020

Time Overrun

14. The scheduled date of commissioning, as per the Investment Approval dated 26.10.2018 and the actual date of commissioning of the FGD are as under:

Unit	Scheduled Completion	Actual Completion Date	Delay
Unit-I	11.9.2019	31.12.2019	111 days
Unit-II	11.10.2019	27.12.2019	77days
Unit-III	10.12.2019	27.7.2020	230 days
Unit-IV	10.11.2019	14.7.2020	247 days

15. The Petitioner submitted that after installing ECS/DSI-based FGD in the units of the generating station, the station was getting very low schedule, and hence, it was either taken under Reserve Shutdown (RSD) on account of the schedule being less than

the Technical Minimum or had to run at very low PLF. The Petitioner has submitted the following reasons regarding the delay in ODe of the ECS as detailed below:

A. WORK AWARDED WITH A SQUEEZED TIMELINE

a) The generating station, being in the vicinity of the NCR Region, has always been on the watchlist of all the Environmental agencies, and it was, therefore, imperative for the Petitioner to immediately conform to the MOEF&CC notification and implement the ECS.

b) Central Pollution Control Board (CPCB), vide its letter dated 11.12.2017, directed the Petitioner to install FGD in the generating station by 31.12.2019.

c) The Petitioner immediately awarded the work of DSI based FGD in order to comply with the revised So_x emission levels. This was being done at a time when no clear guidelines existed regarding the system to be installed for So_x control, as the guidelines for FGD technology selection were issued by CEA on 7.2.2020 only.

d) With the Petitioner being served notices for compliance with the emission norms, the Petitioner awarded the work with a squeezed time schedule to meet the CPCB mandate issued vide letter dated 11.12.2017.

B. EPCA BAN IN NCR

(a) As the Project is in the NCR Region, all civil works were stopped during November 2018 by the EPCA vide report dated 27.10.2018, followed by the UPPCB letter dated 29.9.2018 for implementation of said order in NCR Region. During the initial phase of the project implementation, a work Ban on the construction activity was imposed by EPCA/NGT in NCR, including Dadri, from 1.11.2018 to 10.11.2018 (10 days). This created uncertainty and led to a delay in the mobilization of the manpower at the site. This affected the progress of work for more than 30 days, as the daily laborers, hired by contractors, opted for other work in the nearby areas, and it took more than 1(one) month to mobilize their resources and manpower to undertake the FGD work.

(b) Again, there was an EPCA ban on the construction works from 1.11.2019 till 10.12.2019 (40 days), and the night work ban was from 11.12.2019 to 15.2.2020 (for 67 nights) due to the pollution concerns in NCR. This further led to the delay in the execution of work, leading to a delayed implementation of the DSI system, in all units.

C. COVID-19 Pandemic

(a) 2020 witnessed an unprecedented health and humanitarian crisis arising due to the COVID-19 pandemic, not only in India but around the globe. The various restrictions imposed in relation to it resulted in an adverse impact on the performance of the industrial activities. The Covid-19 epidemic affected many countries, and the World Health Organization declared it a 'pandemic.' The Government of India (GOI) had taken several proactive, preventive, and mitigating measures, starting with progressive tightening of international travel, issuing of advisories for the members of the public, setting up quarantine facilities, contact tracing of persons infected by the virus and

various social distancing measures. Several advisories have been issued to States and Union Territories (UTs) for taking necessary measures to contain the spread of this virus. As the COVID19 pandemic occurred, The Ministry of Finance (MOF), GOI, on 19.2.2020, issued OM, declaring the outbreak of COVID-19 to be an event of a Force Majeure. MOF notification is attached in Annexure-S.

(b) To prevent the spread of the Covid-19 virus in the country, the GOI placed the entire country under lockdown for a period of 21 days w.e.f. 25.3.2020, which was extended further, as under:

a. Phase 1 Lockdown: 25 March 2020 – 14 April 2020 (21 days)
b. Phase 2 Lockdown: 15 April 2020 – 3 May 2020 (19 days)
c. Phase 3 Lockdown: 4 May 2020 – 17 May 2020 (14 days)
d. Phase 4 Lockdown: 18 May 2020 – 31 May 2020 (14 days)

(c) The adoption of FGD technology in India faced a significant hurdle due to the limited availability of skilled manpower for its erection. This specialized manpower required was not only scarce but also geographically dispersed across the country. The COVID-19 pandemic further aggravated this situation by causing a workforce exodus and instilling fear among workers, ultimately hindering project execution.

(d) During the first wave of Covid-19 pandemic, the project execution was kept on hold from 22.3.2020 to 14.5.2020. Although the day work was permitted since 14.5.2020 for one shift only with precautionary measures and maintaining social distancing, due to the exodus of manpower, the manpower mobilization at the site was severely disrupted.

(e) The Commission has recognized the impact of the COVID-19 pandemic and has condoned the delay due to the same in the construction activities in its order dated 19.5.2024 in Petition No. 183/GT/2022 relating to Meja Thermal Power Station.

(f) Further, due to the technology being implemented being a nascent technology and being installed in a squeezed time schedule with an intervening EPCA construction ban delaying the mobilization of resources, the DSI-based FGD for the first two units could be completed in December 2019 only. Further, with Covid-19, which caused widespread devastation, the work for the remaining two units was also severely disrupted. However, with diligent and sustained efforts by the Petitioner, the installation of the DSI system in the remaining two units was completed in July 2020.

16. As regards the period of the delay between the ODe and the actual compliance with the ECS as per the MOEF&CC norms at all load levels, the Petitioner submitted the following:

A. Reasons for Low Scheduling:

a) The Petitioner has furnished the reasons for the low scheduling, including the less demand during the period of the COVID-19 pandemic and the relinquishment of power by the Delhi Discoms, etc. The PLF of the generating station for the period 2019-22 is as under:

FY	PLF (%)
2019-20	31%
2020-21	10%
2021-22	25%

b) On account of low PLF, the system installed for controlling SO_2 emissions (i.e. DSI-based FGD) could not be continuously tested on a full load condition of the unit. As proving the system at full load required a higher schedule, the matter was even taken up by the Petitioner with the beneficiaries. The Petitioner requested to get the schedule for stabilizing and proving the effectiveness of the system on full load condition, but the same couldn't be done.

c) DSI-based FGD technology was in a nascent stage and was being installed for the first time in India. On account of the same, the Petitioner was not in a position to envisage its possible response/efficiency in full load condition beforehand. Further, the system went through various teething problems even at part load operation, including the storage and usage of reagents (i.e., sodium bicarbonate). The reagent used in the present system, i.e., sodium bicarbonate, is hygroscopic in nature and thus tends to absorb moisture and form lumps, thereby choking pipelines, conveying it, and making its storage a challenging task. This problem became grave when the system was frequently taken in and out of service. Therefore, on account of low scheduling, this problem was faced severely by the Petitioner due to frequent Start/Stop of the units. The moisture further affected the system efficiency of SO2 removal, too. After the unit started getting a higher schedule, the system could not meet the desired level of SO2 removal efficiency at a higher load level. Further, as the Petitioner had to meet the targets as per the MoEF notification dated 7.12.2015 and it was not provided a higher schedule by beneficiaries despite the efforts made by the Petitioner, there was no other option than to run the system at a lower load level with intermittent schedule and meet the environmental norms at that load level with the DSI system in operation.

d) Moreover, a stabilization period should be allowed for nascent technology like DSI/FGD and for generating unit(s) with new technology since the commissioning of new technology will face initial stabilization and teething issues.

e) However, the system was complying with the emission standards notified by the MOEF, GOI, during the period from December 2019 to February 2022, with the DSI system running. In this period, the units of the station were getting low schedule, as is evident from the PLF of the station for the period 2019-22. However, after the increased schedule for the station during 2022-23, the system was unable to meet the emission norms, as specified by MOEF&CC, at a higher load level, although the SO_2 emission had reduced with regard to its level before the installation of the system. Considering

the actual SO_2 emission being more than the notified emission standards as well as taking in view the revised timeline for meeting the SO_2 emission target, the Petitioner took up all necessary measures for rectification of technical issues in the system.

f) Problems associated with the system were recognized and modifications were made to address the problems. After modifications, the generating station complied with the Emission standards at all load levels on 1.8.2023 for Unit-I, 3.12.2023 for Unit-II, 08.02.2024 for Unit-III, and 10.03.2024 for Unit-IV DSI system.

Cost Overrun and Capital Cost

17. The Petitioner has not furnished any cost overrun due to the delay in the implementation of the FGD package. The total scheme cost was Rs.86.03 crore which included Rs.80.81 crore as a price quoted by M/s Melco India Pvt. Ltd., Rs.2.42 crore for Project management and Rs.2.80 crore as Interest During Construction (Rs.86.03 crore = Rs.80.81 crore MELCO cost + Rs.2.42 crore Project Management Cost + Rs.2.80 crore IDC). As against investment approval of Rs.80.81 crore, the actual capitalization is Rs. 81.02 crore, and there is a minor deviation of 0.25% as per site requirement.

18. As regards the capital cost of Rs.178.3 crore claimed vide amended Petition, the Petitioner submitted that the increase, over and above the cost of Rs.84.95 crore (Rs.81.02 crore actual capitalisation + Rs.3.93 crore Custom Charges) is due to notional IDC amounting to Rs.21.64 crore and Reagent cost of Rs.76.51 crore. Due to the low scheduling of the generating station in 2019-22, predominantly due to the relinquishment of power by Delhi Discoms, the effectiveness of the system could not be proven at all load levels. This resulted in an increase in the notional IDC due to the efflux of time and cost of Reagent consumed prior to proving the effectiveness of the system at higher load levels.

19. The Petitioner submitted that the same was caused by DSI-based FGD being a nascent technology with various teething problems that could not be envisaged and low

scheduling that prevented the Petitioner from proving the system at higher load levels. It also submitted that had the recovery of the cost of the system installed immediately, after the commissioning, without proving it on higher load levels, then the Reagent cost of Rs.76.51 crore would have been already recovered. However, in the present claim, the Petitioner is already losing ~Rs.7.50 crore on carrying cost on the expenditure incurred towards Reagent. Although the notional IDC amounting to Rs.18.20 crore has been incurred during the period from the actual installation of the system till proven on all load levels, the non-billing of the annual fixed charges on the beneficiaries during such period has protected them from additional burden/cash outflow of Rs.65.00 crore (fixed charges), which is much higher than the notional IDC. The details with regard to the approved and the actual capital cost in Form-B for FGD are as under:

(Rs. in lakh)

	Hard Cost approved in 414/MP/2020	**As per the IA dated 19.9.2018**	**Actual cost**
FGD			
Plant & Machinery, and Civil Works	6846.00	8081.00	8017.51
IDC, FC, IEDC, FERV & Hedging cost	0.00	522.00	9568.61
Total ECS System (FGD)	**6846.00**	**8603.00**	**17586.12**

20. The Petitioner has claimed the following capital cost (as per Form-1(I)) as on the ODe of the ECS system:

(Rs. in lakh)

	2023-24 (1.8.2023)	**2023-24 (3.12.2023)**	**2023-24 (8.2.2024)**	**2023-24 (10.3.2024)**
Capital cost as on ODe of ECS in respective units	2024.67	4073.36	6035.11	8017.51
Add: Notional IDC	1656.30	1802.02	1880.75	1917.18
Add: IEDC*	7651.43	7651.43	7651.43	7651.43
Opening capital cost as on ODe of ECS	**11332.40**	**13526.80**	**15567.29**	**17586.12**

** Consumption of reagent till the date from when the tariff is being claimed.*

Analysis and Decision

21. We have considered the submissions. It is observed that there is a delay of 230 days between the scheduled completion of ECS (10.12.2019) and the actual

commissioning (27.7.2020). It is also observed that there is a delay of 3 years (approx.) between the ODe of ECS and the actual compliance with the Environmental standards prescribed by MOEF&CC. We note that the Petitioner has not submitted the relevant tariff filing forms pertaining to the time and cost overrun in Form-F and Form-G, respectively. According to us, in order to examine the issues related to the FGD installation and to confirm whether the reasons for such delay were beyond the control of the Petitioner, complete details of time overrun with regard to the ODe of the FGD system are required to be furnished, with relevant supporting documents for scrutiny. As such, the time overrun till the ODe has not been examined in this order. The Petitioner is, therefore, directed to furnish the said details with supporting documents at the time of the truing-up of the tariff. Be that as it may, we note that this generating station has been designated as Category-A and has to meet the MOEF&CC norms for compliance with its SOx emissions by December 2024. Thus, considering the fact that the installation of ECS at the existing generating station is to comply with the new stringent environmental norms is necessary and is required to make power available to the beneficiaries on a sustained basis, meeting all statutory requirements and at the same time to avoid cash flow problems, we are inclined to allow the provisional supplementary tariff, towards the implementation of the FGD system in respect of the generating station, based on the capital cost, as approved in the Investment Approval. This is, however, subject to adjustment, after truing up of tariff, in terms of the provisions of the 2019 Tariff Regulations (as amended). We direct accordingly. The Petitioner is also directed to furnish the details of the Liquidated Damages, if any, recovered from the contractors for the delay in completion of the work, the revenue earned through the sale of by-products, and cost overrun in the prescribed (if any) formats as per the forms (Form-F and Form-G) of the 2019 Tariff Regulations.

22. As regards the delay from ODe of the ECS to the compliance with the MOEF&CC norms, we note that the Petitioner was well aware of the low scheduling of the generating station at the time of ECS implementation, which led to the selection of DSI based technology for ECS. Further, the Petitioner's claim for reduced schedule as a reason for the delay in implementation of the ECS by nearly 3 years is not admissible at this stage. In our view, the 2019 Tariff Regulations do not mandate the completion of a trial run as a precondition for declaring the operational date (ODe) of the ECS. Moreover, the said regulations do not provide for any allowance for the delay between the actual ODe of the ECS and the compliance with MOEFCC standards. Therefore, we are not inclined to allow the additional impact of IDC and the cost of Reagents claimed by the Petitioner due to the delay from the actual ODe of the ECS till the compliance with the MOEF&CC standards at this stage. It is also noticed that the Director (Projects) of the Petitioner's company, on 5.7.2022, issued a certificate stating that ECS has been successfully commissioned and put into use at the generating station for all units by 31.12.2019. It has also been mentioned in the said certificate that the ECS schemes are meeting the applicable technical and environmental standards, and the aforementioned units are meeting the revised Emission standards, as specified in the MOEF&CC Notification dated 7.12.2015, notified under Environment (Protection) Amendment Rules, 2015. The Petitioner, in its response to the Commission's queries on the consumption and cost of Reagent has provided the detailed break-up of the same vide affidavit dated 14.11.2024. Considering the said submissions, we consider the cost of Reagent actually incurred till the ODe of such units to be recovered through IEDC, instead of Rs.76.51 crore proposed to be recovered by the Petitioner through IEDC.

23. The Petitioner submitted that the MOEF&CC norms were not met during the trial run in 2022-23, which led to the retrofitting of the ECS. However, the details of such

retrofitting, the details of the delay in operation of the ECS due to the retrofitting, the additional cost incurred for such retrofitting, and the approval for the same have not been furnished by the Petitioner. As ECS works are executed by M/s. MELCO, the quality, quantity, and performance of these works are to be ensured by the Petitioner through the vendor/contractor as per the provisions of the contract, such as PG test, LD, etc. In view of this submission, the capital expenditure due to the retrofitting works claimed by the Petitioner is not considered a part of the capital costs. The Petitioner is directed to provide the detailed change in scope of works, the incidental delay in the operation of ECS due to retrofitting, details of the LD claimed from the contractor due to the non-compliance of Performance Guarantee, and the financial impact of the retrofitting along with requisite documentary evidence at the time of truing up of tariff.

24. Based on the above discussion, the capital cost, considering the reduced notional IDC (up to date of operationalization of ECS), IEDC, and considering the undischarged liabilities as on the compliance of MOEF&CC norms, approved for each unit (as submitted by the Petitioner in Form-B), is summarised as below:

(Rs. in lakh)

	2023-24 (1.8.2023)	**2023-24 (3.12.2023)**	**2023-24 (8.2.2024)**	**2023-24 (10.3.2024)**
Capital cost as on ODe of ECS in respective units (on an accrual basis)	2089.60	4179.19	6337.29	8495.40
Less: Undischarged Liabilities	64.93	105.83	302.19	477.89
Capital cost as on ODe of ECS in respective units (on a cash basis)	2024.67	4073.36	6035.11	8017.51
Add: Notional IDC[$]	114.57	114.57	330.44	330.44
Add: IEDC*	0.00	0.00	15.72	51.66
Opening capital costs allowed	**2139.24**	**4187.93**	**6381.26**	**8399.61**

** Consumption of reagent allowed till Ode $ Notional IDC allowed only till ODe*

Additional Capital Expenditure

25. The Petitioner has not claimed any additional capital expenditure for the year 2023-24.

Capital Cost for the purpose of Supplementary Tariff

26. Accordingly, the capital cost allowed for the purpose of Supplementary tariff is as under:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Opening capital cost	2139.24	4187.93	6381.26	8399.61
Net additional capital expenditure allowed	0.00	0.00	0.00	0.00
Closing capital cost	**2139.24**	**4187.93**	**6381.26**	**8399.61**
Average capital cost	2139.24	4187.93	6381.26	8399.61

Debt-Equity Ratio

27. Regulation 18 of the 2019 Tariff Regulations provides as under:

"18. Debt-Equity Ratio: (1) For a new project, the debt-equity ratio of 70:30 as on date of commercial operation shall be considered. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:
Provided that:
i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:
ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt: equity ratio.
Explanation.-The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.
(2)The generating company or the transmission licensee, as the case may be, shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding infusion of funds from internal resources in support of the utilization made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.
(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, debt: equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2019 shall be considered:
Provided that in case of generating station or a transmission system including communication system which has completed its useful life as on or after 1.4.2019, if the equity actually deployed as on 1.4.2019 is more than 30% of the capital cost, equity in excess of 30% shall not be taken into account for tariff computation;
Provided further that in case of projects owned by Damodar Valley Corporation, the debt: equity ratio shall be governed as per sub-clause (ii) of clause (2) of Regulation 72 of these regulations.

(4) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2019, the Commission shall approve the debt: equity ratio in accordance with clause (1) of this Regulation.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2019 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this Regulation.

(6) Any expenditure incurred for the emission control system during the tariff period as may be admitted by the Commission as additional capital expenditure for determination of supplementary tariff, shall be serviced in the manner specified in clause (1) of this Regulation."

28. The Petitioner has claimed tariff considering the debt-equity ratio of 70:30 as on the ODe of ECS, and the same is considered.

Return on Equity

29. Regulation 30 of the 2019 Tariff Regulations provides as under:

"30. Return on Equity:

(1) Return on equity shall be computed in rupee terms on the equity base determined in accordance with Regulation 18 of these regulations.

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations transmission system including communication system and run of river hydro generating station and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that return on equity in respect of additional capitalization after cut-off date beyond the original scope, excluding additional capitalization on account of emission control system, shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system or in the absence of actual loan portfolio of the generating station or the transmission system, the weighted average rate of interest of the generating company or the transmission licensee, as the case may be, as a whole shall be considered, subject to ceiling of 14%.

Provided further that:

(i) In case of a new project the rate of return on equity shall be reduced by 1.00% for such period as may be decided by the Commission if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO) or Free Governor Mode Operation (FGMO) data telemetry communication system up to load dispatch centre or protection system based on the report submitted by the respective RLDC;

(ii) in case of existing generating station as and when any of the requirements under (i) above of this Regulation are found lacking based on the report submitted by the concerned RLDC rate of return on equity shall be reduced by 1.00% for the period for which the deficiency continues;

(iii) in case of a thermal generating station with effect from 1.4.2020:

(a) rate of return on equity shall be reduced by 0.25% in case of failure to achieve the ramp rate of 1% per minute;

(b) an additional rate of return on equity of 0.25% shall be allowed for every incremental ramp rate of 1% per minute achieved over and above the ramp rate of 1% per minute subject to ceiling of additional rate of return on equity of 1.00%:

Provided that the detailed guidelines in this regard shall be issued by National Load Dispatch Centre by 30.6.2019.

(3) The return on equity in respect of additional capitalization on account of emission control system shall be computed at the base rate of one year marginal cost of lending rate (MCLR) of the State Bank of India as on 1st April of the year in which the date of operation (ODe) occurs plus 350 basis point, subject to ceiling of 14%."

30. Regulation 31 of the 2019 Tariff Regulations provides as under:

"31. Tax on Return on Equity:

(1) The base rate of return on equity as allowed by the Commission under Regulation 30 of these regulations shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee as the case may be. The actual tax paid on income from other businesses including deferred tax liability (i.e. income from business other than business of generation or transmission as the case may be) shall be excluded for the calculation of effective tax rate.

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where "t" is the effective tax rate in accordance with Clause (1) of this Regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business as the case may be and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT) "t" shall be considered as MAT rate including surcharge and cess.

Illustration-

(i) In case of the generating company or the transmission licensee paying Minimum Alternate

Tax (MAT) @ 21.55% including surcharge and cess:

Rate of return on equity = 15.50/(1-0.2155) = 19.758%

(ii) In case of a generating company or the transmission licensee paying normal corporate tax including surcharge and cess:

(a) Estimated Gross Income from generation or transmission business for FY 2019-20 is Rs

1000 crore;

(b) Estimated Advance Tax for the year on above is Rs 240 crore;

(c) Effective Tax Rate for the year 2019-20 = Rs 240 Crore/Rs 1000 Crore = 24%;

(d) Rate of return on equity = 15.50/ (1-0.24) = 20.395%.

(2) The generating company or the transmission licensee as the case may be shall true up the grossed-up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2019-24 on actual gross income of any financial year. However, penalty if any arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up shall be recovered or refunded to beneficiaries or the long-term transmission customers as the case may be on year to year basis."

31. The Petitioner has claimed the rate of Return on Equity (RoE) of 14.541% for the period from 1.8.2023 to 31.3.2024, considering the base rate of RoE as 12% (i.e., 1-year SBI MCLR of 8.50% as on 1.4.2023 + 350 bps) and effective tax rate of 17.472% being MAT rate applicable for the year 2023-24. The same is in order and, accordingly, considered for the purpose of tariff. Accordingly, RoE has been worked out as under:

(Rs. in lakh)

		2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
A	Normative Equity-Opening	641.77	1256.38	1914.38	2519.88
B	Addition of Equity due to additional capital expenditure	0.00	0.00	0.00	0.00
C	Normative Equity-Closing (A+B)	641.77	1256.38	1914.38	2519.88
D	Average Normative Equity [(A+C)/2]	641.77	1256.38	1914.38	2519.88
E	Return on Equity (Base Rate)	12.000%	12.000%	12.000%	12.000%
F	Effective Tax Rate for the year	17.472%	17.472%	17.472%	17.472%
G	Rate of Return on Equity (Pre-Tax) [E/(1-F)]	14.541%	14.541%	14.541%	14.541%
H	**Return on Equity (Pre-Tax) (DxG) (*annualized)***	**93.32**	**182.69**	**278.37**	**366.42**
I	**Return on Equity (pro-rata)**	**31.62**	**33.44**	**23.58**	**22.03**

Interest on Loan

32. Regulation 32 of the 2019 Tariff Regulations provides as under:

> *"32. Interest on loan capital: (1) The loans arrived at in the manner indicated in Regulation 18 of these regulations shall be considered as gross normative loan for calculation of interest on loan.*
> *(2) The normative loan outstanding as on 1.4.2019 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2019 from the gross normative loan.*
> *(3) The repayment for each of the year of the tariff period 2019-24 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of decapitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalization of such asset.*
> *(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.*
> *(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:*
> *Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:*

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.
(5a) The rate of interest on loan for installation of emission control system shall be the weighted average rate of interest of actual loan portfolio of the emission control system or in the absence of actual loan portfolio, the weighted average rate of interest of the generating company as a whole shall be considered.
(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.
(7) The changes to the terms and conditions of the loan shall be reflected from the date of such re-financing."

33. Interest on loan has been worked out as under:

(a) Gross normative loan equivalent to 70% of the capital cost allowed as on respective ODe's of ECS has been considered.

(b) Depreciation allowed has been considered as repayment of normative loan during the respective year of the period 2019-24.

(c) The weighted average rate of interest as claimed by the Petitioner has been considered for the purpose of tariff.

34. Necessary calculations for interest on loan, are as under:

(Rs. in lakh)

		2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
A	Gross opening loan	1497.47	2931.55	4,466.89	5,879.73
B	Cumulative repayment of loan up to previous year/period	0.00	65.23	135.41	185.52
C	Net Loan Opening (A-B)	1497.47	2866.32	4,331.47	5,694.20
D	Addition due to additional capital expenditure	0.00	0.00	0.00	0.00
E	Repayment of loan during the year	65.23	70.18	50.11	47.19
F	Net Loan Closing (C+D-E)	1432.24	2796.14	4281.36	5647.02
G	Average Loan [(C+F)/2]	1464.85	2831.23	4306.42	5670.61
H	WAROI	7.6427%	7.6427%	7.6427%	7.6427%
I	**Interest on Loan (GxH) (*annualised)***	**111.95**	**216.38**	**329.13**	**433.39**
J	**Interest on Loan (pro-rata*)***	**37.93**	**39.61**	**27.88**	**26.05**

Depreciation

35. Regulation 33 of the 2019 Tariff Regulations provides as under:

"33. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system or element thereof including communication system. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units:

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of a transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:
Provided that the salvage value for IT equipment and software shall be considered as NIL and 100% value of the assets shall be considered depreciable;

Provided further that in case of hydro generating stations, the salvage value shall be as provided in the agreement, if any, signed by the developers with the State Government for development of the generating station:

Provided also that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life or the extended life.

(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-I to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

(6) In case of the existing projects, the balance depreciable value as on 1.4.2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2019 from the gross depreciable value of the assets.

(7) The generating company or the transmission licensee, as the case may be, shall submit the details of proposed capital expenditure five years before the completion of useful life of the project along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services.

9) Where the emission control system is implemented within the original scope of the generating station and the date of commercial operation of the generating station or unit thereof and the date of operation of the emission control system are the same, depreciation of the generating station or unit thereof including the emission control system shall be computed in accordance with Clauses (1) to (8) of this Regulation.

(10) Depreciation of the emission control system of an existing or a new generating station or unit thereof where the date of operation of the emission control system is subsequent to the date of commercial operation of the generating station or unit thereof, shall be computed annually from the date of operation of such emission control system based on straight line method, with salvage value of 10%, over a period of — a) twenty five years, in case the generating station or unit thereof is in operation for fifteen years or less as on the date of operation of the emission control system; or b) balance useful life of the generating station or unit thereof plus fifteen years, in case the generating station or unit thereof is in operation for more than fifteen years as on the date of operation of the emission control system; or c) ten years or a period mutually agreed by the generating company and the beneficiaries, whichever is higher, in case the generating station or unit thereof has completed its useful life."

36. The Petitioner has claimed depreciation over a period of 10 years from the date of compliance with the environmental norms prescribed by MOEF&CC. The generating station has not completed its useful life and has been in operation for more than 15 years, as on ODe of ECS for Unit-I. Accordingly, depreciation should have been allowed over a period of 16.38 years (i.e., 1.38 years balance useful life of the generating station as on ODe of ECS for Unit-I + 15 years). However, considering the fact that tariff has been claimed and allowed from 1.8.2023 (i.e., date of compliance with environmental norms prescribed by MOEFCC towards ECS for Unit-I) where the balance useful life of the generating station is 'nil,' we deem it fit to allow depreciation over a period of 10 years from 1.8.2023. Accordingly, depreciation has been computed and allowed as under:

(Rs. in lakh)

		2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
A	Average capital cost	2139.24	4187.93	6381.26	8399.61
B	Depreciable Value (A x 90%)	1925.32	3769.14	5743.14	7559.65
C	Balance useful life	10.00	9.66	9.48	9.39
D	Remaining depreciable value at the beginning of the year (B-'G' of previous year/period)	1925.32	3703.91	5607.73	7374.13
E	**Depreciation during the year *(pro-rata)***	65.23	70.18	50.11	47.19
F	**Depreciation during the year (D/C) *(annualised)***	**192.53**	**383.38**	**591.65**	**785.03**

		2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
G	**Cumulative depreciation at the end of the year (E+'G' of the previous year / period)**	**65.23**	**135.41**	**185.52**	**232.71**

O&M Expenses

37. Regulation 35(7) of the 2019 Tariff Regulations provides for O&M expenses for ECS system as under:

> *"The operation and maintenance expenses on account of emission control system in coal or lignite based thermal generating station shall be 2% of the admitted capital expenditure (excluding IDC and IEDC) as on its date of operation, which shall be escalated annually @3.5% during the tariff period ending on 31st March 2024:*
>
> *Provided that income generated from sale of gypsum or other by-products shall be reduced from the operation and maintenance expenses."*

38. Based on the above, the Petitioner has claimed the following O&M expenses:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
O&M expenses under Reg.35(1)(7)				
Normative O&M expenses-ECS	40.49	81.47	120.70	160.35
Total O&M Expenses	**40.49**	**81.47**	**120.70**	**160.35**

39. The Petitioner has not claimed any income from the sale of the by-products. The O&M expenses claimed are in line with Regulation 35(7) of the 2019 Tariff Regulations. Since the capital cost as on ODe of FGD units is subject to revision, the O&M expenses claimed are provisionally considered. The Petitioner is, however, directed to furnish the details of income from the sale of the by-products, if any, at the time of truing-up of tariff.

Operational Norms

40. The operational norms with respect to ECS (FGD), i.e., normative annual plant availability factor, specific limestone consumption, and auxiliary power consumption, are discussed below:

Normative Annual Plant Availability Factor (NAPAF)

41. The Petitioner has claimed NAPAF of 85% and the same is allowed.

Auxiliary Power Consumption (APC)

42. The Petitioner has claimed an additional APC of 0.14% as per the Guarantee schedule furnished by the executing agency, i.e., M/s Melco India. As regards APC, sub-clause (f) of clause (E) of Regulation 49 of the 2019 Tariff Regulations, provides for 'nil' APC for dry FGD system. Since the claim of the Petitioner is for review of norms, which is not permissible through this petition, APC is considered as 'nil' in terms of the regulation for the DSI FGD. However, the Petitioner, if aggrieved, is at liberty to approach the CEA, if so advised, for the revision of norms.

Consumption of Reagent

43. Regulation 49 clause (F) of the 2019 Tariff Regulations provides as under:

*"(**F**) **Norms for consumption of reagent:***

(1) The normative consumption of specific reagents for various technologies for the reduction of emission of sulphur dioxide shall be as under:

"(c) For Dry Sorbent Injection System (using sodium bicarbonate): The specific consumption of sodium bicarbonate shall be 12 gm per kWh at 100% purity."

44. The Petitioner has claimed Specific Reagent Consumption of 0.012 kg/kWh in terms of the above regulation and, therefore, allowed.

<u>Interest on Working Capital</u>

45. Regulation 34(a) (aa) of the 2019 Tariff Regulations covers the provisions for the Interest on Working Capital the following provisions for the working capital in the emission control system:

> *"(aa) For emission control system of coal or lignite based thermal generating stations:*
>
> *(i) Cost of limestone or reagent towards stock for 20 days corresponding to the normative annual plant availability factor;*
>
> *(ii) Advance payment for 30 days towards cost of reagent for generation corresponding to the normative annual plant availability factor;*

(iii) Receivables equivalent to 45 days of supplementary capacity charge and supplementary energy charge for sale of electricity calculated on the normative annual plant availability factor;

(iv) Operation and maintenance expenses in respect of emission control system for one month;

(v) Maintenance spares @20% of operation and maintenance expenses in respect of emission control system."

46. The Petitioner has claimed the Interest on Working Capital as under:

(Rs. in lakh)

	Norms	**2023-24 (1.8.2023 to 2.12.2023)**	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Cost of Reagent toward stock	20 days	466.18	923.19	1322.10	1714.90
Cost of Reagent toward generation	30 days	699.26	1384.79	1983.15	2572.34
Receivables	45 days	1350.27	2465.76	3444.03	4408.47
O & M Expenses	1 mon.	3.37	6.79	10.06	13.36
Maintenance Spares	@20%	8.10	16.29	24.14	32.07
Total Working Capital		**2527.18**	**4796.82**	**6783.47**	**8741.15**
Rate of Interest	%	12.00	12.00	12.00	12.00
Interest on Working Capital		**303.26**	**575.62**	**814.02**	**1048.94**

Landed Cost of Reagent

47. As regards the landed cost of limestone, Regulation 41(1) of the 2019 Tariff Regulations provides as under:

41(1) Where specific reagents such as Limestone, Sodium Bi-Carbonate, Urea or Anhydrous Ammonia are used during operation of emission control system for meeting revised emission standards, the landed cost of such reagents shall be determined based on normative consumption and purchase price of the reagent through competitive bidding, applicable statutory charges and transportation cost.

48. The Petitioner, in Form 16A, has claimed the following landed cost of Reagent:

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Cost of Reagent Stock (20 days per annum) corresponding to the normative annual plant availability factor	466.18	923.19	1,322.10	1,714.90
Advance Payment for reagent (30 days per annum) for generation corresponding to the normative annual plant availability factor	699.26	1,384.79	1,983.15	2,572.34

49. It is noticed from the claim of the Petitioner, in Form-16, that the cost of the Reagent claimed by the Petitioner has not been audited. However, the same has been considered in this order. The Petitioner is directed to certify, at the time of truing-up of tariff, that the purchase price of Reagent is through a competitive bidding process with supporting documents, along with the basis of the transportation rates/details of the transport charges, duly certified by the Auditor, along with the reason for variations.

50. Accordingly, the cost of Reagent considered for the calculation of working capital is as under:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Cost of Limestone/Reagent Stock (20 days per annum) corresponding to the normative annual plant availability factor	466.18	923.19	1322.10	1714.90
Advance Payment for limestone (30 days per annum) for generation corresponding to the normative annual plant availability factor	699.26	1384.79	1983.15	2572.34

Supplementary Energy Charge Rate (Supplementary ECR)

51. As regards SECR, Regulation 43 (1a) of the 2019 Tariff Regulations provides as under:

> *" (1a) The supplementary energy charge on account of emission control system shall cover the differential energy charges due to auxiliary energy consumption and cost of reagent consumption, and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the supplementary energy charge rate of the month. Total supplementary energy charge payable to the generating company for a month shall be:*
>
> *Supplementary Energy Charges = (Supplementary energy charge rate in Rs./kWh) x {Scheduled energy (ex-bus) for the month in kWh}"*

52. Regulation 43(2)(a) (aa) of the 2019 Tariff Regulations provides as under:

> ***"(aa) Supplementary ECR for coal and lignite based thermal generating stations:***
>
> *Supplementary ECR = (∆ECR) + [(SRC x LPR / 10)/(100-(AUXn + AUXen))]*
> *Where,*
> *(∆ECR) = Difference between ECR with revised auxiliary energy consumption with emission control system equivalent to (AUXn + AUXen) and ECR with normative auxiliary energy consumption as specified in these regulations and revised;*

SRC = Specific reagent consumption on account of revised emission standards (in g/kWh);

LPR = Weighted average landed price of reagent for emission control system (in Rs./kg)".

53. The Petitioner has claimed Supplementary ECR as follows:

	Unit	2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
Auxiliary consumption (Normative)	%	8.50	8.50	8.50	8.50
Additional Auxiliary Power Consumption (ECS)	%	0.14	0.14	0.14	0.14
Specific Reagent Consumption	kg/kWh	0.012	0.012	0.012	0.012
Landed Cost of Reagent	Rs/MT	45341	44895	42863	41698
Supplementary Energy Charge	Rs/kWh	0.60	0.59	0.56	0.55

54. The Petitioner has claimed the above Supplementary ECR in terms of Regulation 43(1)(a) and Regulation 43(2)(a) (aa) of the 2019 Tariff Regulations and 0.14% of Additional APC. The Petitioner's claims have been verified. However, the revised Supplementary ECR is allowed, considering 'nil' normative auxiliary consumption for DSI FGD and ECR. with normative auxiliary energy consumption as under:

	Unit	2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
Auxiliary consumption (A)	%	8.50	8.50	8.50	8.50
Additional Auxiliary Power Consumption (ECS) (B)	%	0.00	0.00	0.00	0.00
Specific Reagent Consumption (C)	kg/kWh	0.012	0.012	0.012	0.012
Landed Cost of Reagent (D)	Rs/MT	45,341	44,895	42,863	41,698
Supplementary Energy Charge (E)= (C)*(D)/1000/(1-(A)-(B))	Rs/kWh	0.59	0.59	0.56	0.55

55. The Petitioner is directed to submit the relevant documents in support of the claim for CVPF, LPR, and Reagent purity at the time of the truing-up of the tariff.

Working Capital for Receivables

56. The Petitioner has claimed Receivables equivalent to 45 days of supplementary capacity charge and supplementary energy charge for the sale of electricity, calculated on the normative annual plant availability factor, as under:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Receivables equivalent to 45 days of supplementary capacity charge	1350.27	2465.76	3444.03	4408.47
Supplementary energy charge for the sale of electricity calculated on the normative annual plant availability factor	0.60	0.59	0.56	0.55
Total	**1350.87**	**2466.35**	**3444.59**	**4409.02**

57. Considering the energy charges and capacity charges allowed, the allowable receivables work out as under:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Receivables equivalent to 45 days of supplementary capacity charge	88.04	173.83	259.25	340.46
Supplementary energy charge for the sale of electricity calculated on the normative annual plant availability factor	1049.54	2077.92	2974.00	3859.49
Total	**1137.58**	**2251.75**	**3233.25**	**4199.96**

O&M Expenses (1 month) for computation of working capital

58. In terms of Regulation 34 (aa) (iv) of the 2019 Tariff Regulations, one month's O&M expenses allowed is as under:

(Rs. in lakh)

2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
3.37	6.79	10.06	13.36

Maintenance Spares for computation of working capital

59. In terms of Regulation 34(aa)(v) of the 2019 Tariff Regulations, maintenance spares @ 20% of the O&M expenses allowed is as under:

(Rs. in lakh)

2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
8.10	16.29	24.14	32.07

60. In line with Regulation 34(3) of the 2019 Tariff Regulations, the rate of interest on working capital is considered as 12.00% (i.e., 1-year SBI MCLR as on 1.4.2023 + 350 bps). Accordingly, the Interest on Working Capital has been computed and allowed as under:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Working capital for Cost of Limestone/ Reagent Stock (20 days generation corresponding to NAPAF)	466.18	923.19	1322.10	1714.90
Working capital for advances towards Cost of Limestone/ Reagent Stock (30 days generation corresponding to NAPAF)	699.26	1384.79	1983.15	2572.34
Working capital for Maintenance Spares (20% of O&M expenses)	8.10	16.29	24.14	32.07
Working capital for Receivables (45 days of sale of electricity at NAPAF)	1137.58	2251.75	3233.25	4199.96
Working capital for O&M expenses (1 month of O&M expenses)	3.37	6.79	10.06	13.36
Total Working Capital	**2314.49**	**4582.81**	**6572.69**	**8532.63**
Rate of Interest	12.00%	12.00%	12.00%	12.00%
Interest on Working capital (*annualized*)	**277.74**	**549.94**	**788.72**	**1023.92**
Interest on Working capital (*pro-rata*)	**94.10**	**100.67**	**66.80**	**61.55**

Supplementary tariff for the period 2019-24

61. Accordingly, the supplementary tariff approved towards the installation of ECS in respect of the generating station for the period 2019-24 is summarised below:

(Rs. in lakh)

	2023-24 (1.8.2023 to 2.12.2023)	**2023-24 (3.12.2023 to 7.2.2024)**	**2023-24 (8.2.2024 to 9.3.2024)**	**2023-24 (10.3.2024 to 31.3.2024)**
Depreciation	192.53	383.38	591.65	785.03
Interest on Loan	111.95	216.38	329.13	433.39

	2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
Return on Equity	93.32	182.69	278.37	366.42
Interest on Working Capital	277.74	549.94	788.72	1023.92
O&M Expenses	40.49	81.47	120.70	160.35
Total	**716.04**	**1413.86**	**2108.57**	**2769.10**

Note: *(1) All figures are on an annualized basis. (2) All figures under each head have been rounded. The figure in total column in each year is also rounded. As such, the sum of individual items may not be equal to the arithmetic total of the column.*

62. The pro-rata tariff is to be calculated using the bases as under:

	2023-24 (1.8.2023 to 2.12.2023)	2023-24 (3.12.2023 to 7.2.2024)	2023-24 (8.2.2024 to 9.3.2024)	2023-24 (10.3.2024 to 31.3.2024)
No. of days in the year	366	366	366	366
No. of days for which tariff is to be calculated	124	67	31	22

63. The supplementary tariff approved as above is subject to truing-up in terms of Regulation 13 of the 2019 Tariff Regulations.

64. Petition No. 119/GT/2023 is disposed of in terms of the above.

Sd/-	***Sd/-***	***Sd/-***
(Harish Dudani)	**(Ramesh Babu V.)**	**(Jishnu Barua)**
Member	**Member**	**Chairperson**