CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 3/GT/2021

Coram:
Shri P. K. Pujari, Chairperson
Shri I. S. Jha, Member
Shri Pravas Kumar Singh, Member

Date of Order: **15th April, 2022**

In the matter of

Petition for approval of tariff of Feroze Gandhi Unchahar Thermal Power Station Stage-IV (500 MW) for the 2019-24 tariff period

And

In the matter of

NTPC Limited,
NTPC Bhawan,
Core-7, SCOPE Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003 **….Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg,
Lucknow- 226001

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

3. Haryana Power Purchase Centre,
Shakti Bhawan, Sector -VI,
Panchkula,
Haryana-134109

4. Power Development Department,
Government of J&K, Civil Secretariat,
Srinagar

5. Electricity Department,
Union Territory of Chandigarh,
Additional Office Building, Sector 9-D,
Chandigarh

6. Uttarakhand Power Corporation Limited,
Urja Bhavan, Kanwali Road,
Dehradun-248001 …. **Respondents**

Parties present:

Ms. Swapna Seshadri, Advocate, NTPC
Shri Anand K. Ganesan, Advocate, NTPC
Ms. Ritu Apurva, Advocate, NTPC
Shri Manish Garg, UPPCL

ORDER

The Petitioner, NTPC Limited has filed this petition for approval of tariff of Feroze Gandhi Unchahar Thermal Power Station, Stage-IV (500 MW) (hereinafter referred to as "the generating station") for the period 1.4.2019 to 31.3.2024, based on the projected additional capital expenditure up to 31.3.2024, in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (hereinafter referred to as 'the 2019 Tariff Regulations').

2. The generating station is located at Unchahar in Raebareli district in the State of Uttar Pradesh and comprises of one unit of 500 MW capacity. The COD of the generating station is 30.9.2017. The project has been implemented as an expansion to Feroze Gandhi Unchahar TPS-I (2 x 210 MW), Feroze Gandhi Unchahar TPS-II (2 x 210 MW) and Feroze Gandhi Unchahar TPS-III (1 x 210 MW). The Commission vide its order dated 6.12.2019 in Petition No. 197/GT/2017 had determined the annual fixed charges for the generating station Stage-IV from 31.3.2017 to 31.3.2019.

Subsequently, the Commission vide order dated 16.3.2022 in Petition No. 364/GT/2020 revised the tariff of the generating station Stage-IV from the actual date of commercial operation i.e 30.9.2017 to 31.3.2019, after truing up. The capital cost and the annual fixed charges approved vide order dated 16.3.2022 in Petition No. 364/GT/2020 are as under:

Capital cost allowed

(Rs. in lakh)

	2017-18 (30.9.2017 to 31.3.2018)	2018-19
Opening Capital Cost	226614.78	233950.01
Add: Addition during the year / period (Net of exclusion not allowed)	4489.60	6872.18
Less: De-capitalization during the year /period	1.19	60.44
Add: Discharges during the year /period	2846.82	6672.74
Closing Capital Cost	**233950.01**	**247434.50**
Average Capital Cost	230282.39	240692.25

Annual Fixed Charges allowed

(Rs. in lakh)

	2017-18	2018-19
Depreciation	12388.83	12841.01
Interest on Loan	10512.06	10572.87
Return on Equity	13613.14	14266.79
Interest on Working Capital	5231.15	5293.78
O&M Expenses	9629.99	10279.25
Total	**51375.17**	**53253.71**

Present Petition

3. The Petitioner has filed the present Petition for determination of tariff of the generating station for the 2019-24 tariff period and has claimed the annual fixed charges and capital cost as under:

Capital cost claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	247436.88	272401.94	282355.78	283862.46	284262.46
Add: Addition during the year	24965.06	9953.84	1506.69	400.00	0.00

Less: De-capitalization during the year	0.00	0.00	0.00	0.00	0.00
Less: Reversal during the year	0.00	0.00	0.00	0.00	0.00
Add: Discharges during the year	0.00	0.00	0.00	0.00	0.00
Closing Capital Cost	**272401.94**	**282355.78**	**283862.46**	**284262.46**	**284262.46**

Annual Fixed Charges claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	13860.57	14791.62	15097.19	15148.03	15158.69
Interest on loan	10789.04	10641.14	9864.32	8790.50	7594.06
Return on equity	14645.42	15629.19	15952.07	16005.78	16017.05
Interest on working capital	4344.39	4398.98	4423.77	4437.58	4447.18
O&M expenses	12628.66	13144.94	13688.28	14259.87	14856.03
Total	**56268.08**	**58605.87**	**59025.62**	**58641.76**	**58073.01**

4. Reply has been filed by the Respondent UPPCL vide affidavit dated 11.1.2021 and the Petitioner vide affidavit dated 27.5.2021 has filed its rejoinder to the said reply. Further, the Petitioner has filed additional submissions vide affidavits dated 17.5.2021 and 4.6.2020 and 1.6.2021. The petition was heard on 11.6.2021 and the Commission vide Record of the Proceedings had allowed the parties to submit certain additional replies and rejoinders and reserved its order in the matter. Based on the submissions of the parties and the documents available on record, we proceed to determine the tariff of the generating station for the 2019-24 tariff period, on prudence check, as stated in the subsequent paragraphs.

Capital Cost

5. Clause (1) of Regulation 19 of the 2019 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance with this regulation, shall form the basis of determination of tariff for existing and new projects. Clause 3 of Regulation 19 of the 2019 Tariff

Regulations provides as under:

"(3) The Capital cost of an existing project shall include the following:

(a) Capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;

(b) Additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these regulations;

(c) Capital expenditure on account of renovation and modernization as admitted by this Commission in accordance with these regulations;

(d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;

(e) Capital expenditure incurred towards railway infrastructure and its augmentation for transportation of coal upto the receiving end of generating station but does not include the transportation cost and any other appurtenant cost paid to the railway; and

(f) Capital cost incurred or projected to be incurred by a thermal generating station, on account of implementation of the norms under Perform, Achieve and Trade (PAT) scheme of Government of India shall be considered by the Commission subject to sharing of benefits accrued under the PAT scheme with the beneficiaries."

6. The Petitioner vide Form-I(I) of the petition has claimed capital cost as indicated in the table under paragraph 3 above. The Commission vide its order dated 16.3.2022 in Petition No. 364/GT/2020 had approved the closing capital cost of Rs.247434.50 lakh as on 31.3.2019. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations, the capital cost of Rs.247434.50 lakh as on 31.3.2019 has been considered as the opening capital cost as on 1.4.2019, on cash basis, for the purpose of determination of tariff for the 2019-24 tariff period.

<u>Additional Capital Expenditure</u>

7. Regulations 24, 25 and 26 of the 2019 Tariff Regulations, provides as under:

*"24**.** Additional Capitalization within the original scope and up to the cut-off date*
(1) The additional capital expenditure in respect of a new project or an existing project incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:

(a) Un-discharged liabilities recognized to be payable at a future date;
(b) Works deferred for execution;
(c) Procurement of initial capital spares within the original scope of work, in accordance with the provisions of Regulation 23 of these regulations;
(d) Liabilities to meet award of arbitration or for compliance of the directions or order

of any statutory authority or order or decree of any court of law;
(e)Change in law or compliance of any existing law; and
(f)Force Majeure events:

Provided that in case of any replacement of the assets, the additional capitalization shall be worked out after adjusting the gross fixed assets and cumulative depreciation of the assets replaced on account of de-capitalization.

(2) The generating company or the transmission licensee, as the case may be shall submit the details of works asset wise/work wise included in the original scope of work along with estimates of expenditure, liabilities recognized to be payable at a future date and the works deferred for execution.

***25.** Additional Capitalization within the original scope and after the cut-off date:*

(1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts within the original scope of work and after the cut-off date may be admitted by the Commission, subject to prudence check:

(a) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;

(b) Change in law or compliance of any existing law;

(c) Deferred works relating to ash pond or ash handling system in the original scope of work;

(d) Liability for works executed prior to the cut-off date;

(e) Force Majeure events;

(f) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and

(g) Raising of ash dyke as a part of ash disposal system.

(2) In case of replacement of assets deployed under the original scope of the existing project after cut-off date, the additional capitalization may be admitted by the Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to prudence check on the following grounds:

(a) The useful life of the assets is not commensurate with the useful life of the project and such assets have been fully depreciated in accordance with the provisions of these regulations;

(b) The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;

(c) The replacement of such asset or equipment is necessary on account of obsolescence of technology; and

(d) The replacement of such asset or equipment has otherwise been allowed by the Commission.

***26.** Additional Capitalization beyond the original scope*

(1) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts beyond the original scope, may be admitted by the Commission, subject to prudence check:

(a) Liabilities to meet award of arbitration or for compliance of order or directions of any statutory authority, or order or decree of any court of law;

(b) Change in law or compliance of any existing law;

(c) Force Majeure events;

(d) Need for higher security and safety of the plant as advised or directed by appropriate Indian Government Instrumentality or statutory authorities responsible for national or internal security;

(e) Deferred works relating to ash pond or ash handling system in additional to the original scope of work, on case to case basis:

Provided also that if any expenditure has been claimed under Renovation and Modernization (R&M) or repairs and maintenance under O&M expenses, the same shall not be claimed under this Regulation;

(f) Usage of water from sewage treatment plant in thermal generating station.

(2) In case of de-capitalization of assets of a generating company or the transmission licensee, as the case may be, the original cost of such asset as on the date of de-capitalization shall be deducted from the value of gross fixed asset and corresponding loan as well as equity shall be deducted from outstanding loan and the equity respectively in the year such de-capitalization takes place with corresponding adjustments in cumulative depreciation and cumulative repayment of loan, duly taking into consideration the year in which it was capitalized."

8. The projected additional capital expenditure claimed by the Petitioner for the 2019-24 tariff period is as under:

(Rs. in lakh)

	Regulation	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Works within original scope, change-in-law etc. eligible for ROE at normal rate						
EPC Package	24(1)(b)	21600.00	6400.00	0.00	0.00	0.00
Coal Transportation system	24(1)(b)	956.00	498.00	0.00	0.00	0.00
Township and Colony	24(1)(b)	1126.11	2010.04	722.20	400.00	0.00
Canal Lining	24(1)(b)	50.00	200.00	0.00	0.00	0.00
Ash Dyke raising (Arkha)	24(1)(b)	1000.00	392.00	0.00	0.00	0.00
Design Supply and Installation of CCTV System	24(1)(b)	28.70	0.00	0.00	0.00	0.00
HFO to LDO conversion	26(1)(b)	0.00	250.00	69.00	0.00	0.00
Replacement of Chlorine System by CLO2	26(1)(b), 26(1)(d)	44.25	88.50	715.49	0.00	0.00
Roof top solar on Stage-IV buildings	24(1)(b), 24(1)(e)	160.00	115.30	0.00	0.00	0.00
Total		**24965.06**	**9953.84**	**1506.69**	**400.00**	**0.00**

9. We now examine the submissions and claims made by the Petitioner as regards additional capital expenditure on projected basis for the 2019-24 tariff period in subsequent paragraphs.

10. The Petitioner has submitted that the capitalization of certain works under original scope, are likely to get spilled over beyond cutoff date on account of some unforeseen circumstances beyond its control. Subsequently, it has submitted that the unavoidable and uncontrollable reasons like (i) non-Availability of 'Sand and Moorum' due to ban in mining and (ii) excess rainfall during the period from June 2016 to October 2016 delayed the completion of project beyond original schedule. The Petitioner has further submitted that the Commission vide order dated 6.12.2019 was pleased to consider the delay based on the said reasons. The COD of the generating station was delayed even though maximum resources were diverted towards COD related activities. However, consequent and cascading effect of these reasons came heavily upon schedule of non-COD related balance works and also due to the implementation of GST in July 2017 which delayed award of certain packages.

11. The Petitioner has further submitted that assets/works claimed in present petition are envisaged to be completed after the scheduled cut-off date and are necessary for efficient functioning of the station. It would not be justified to deny the entire cost of these assets because in such case the beneficiaries would be taking the benefit of these assets without servicing the associated cost. Further, there is no cost overrun on account of delay in completion of these works. The Petitioner has invoked Regulation 76 (Power to Relax) and Regulation 77 (Power to Remove Difficulty) of the 2019 Tariff Regulations and had prayed for condonation of delay in completion of claimed assets/works and allow the capitalization of the same for the tariff purpose during the 2019-24 tariff period by relaxing the cut-off date beyond

31.3.2020 for 6 months i.e. up to 31.3.2021. Per contra, the Respondent UPPCL has submitted that the extension of cut-off date should be in line with its earlier order dated 6.12.2019 in Petition No.197/GT/2017 and any delay beyond that may be disallowed. The Petitioner has clarified that non-COD related capitalization which are projected to be spilled over the cut-off date are not detrimental to the beneficiaries and on the contrary, protects the beneficiaries from front loading of the tariff and as such no additional burden is imposed on them due to delays in such balance works.

12. It is pertinent to mention that the Petitioner had filed a separate petition i.e. Petition No. 639/MP/2020 for relaxation of cutoff date of this generating station and the Commission vide order dated 21.5.2021 directed as under:

> *" the Petitioner is granted liberty to raise the issue of extension of cut-off date in Petition No. 3/GT/2021 that has already been filed by the Petitioner for truing up of tariff for the 2014-19 period and determination of tariff for the 2019-24 period."*

In view of above, the extension of cut-off date is being considered in this petition.

13. The Petitioner vide additional submissions dated 4.6.2021 has submitted that the additional capital expenditure claimed in respect of assets within the original scope of work for the generating station has spilled over beyond 2020-21 on account of following unforeseen factors/reason beyond the control of the Petitioner:

(I) ***COVID-19 Pandemic:*** The Nationwide lockdown of 68 days affected all balance work in packages such as Main Plant/ BOP Package (Electrical System, HVAC, FDPS, AHP System, CHP system), Coal Handling System, Township/colony civil works, sewerage treatment plant/associated works, site development works etc. All these works were supposed to be completed maximum by March 2021. However, as the lockdown was announced, all the construction work came to standstill condition. The construction activity of balance works at the instant station could not be normalized as the labourers and workforce did not turn up fully due to Covid 19 scare. Further, social distancing norms were also to be followed strictly at work site on the basis of Government guidelines. The non-availability of required number of skilled and semi-skilled labourers hampered the smooth progress of work and caused a direct disruption in completing the construction activities of balance facilities. The communications regarding the situation from the contractors and vendors indicating the disruption of construction activity at site as well as at the manufacturing facilities due to initial COVID wave are submitted in the present petition.

(II)***Soil Cohesive Mix with Alluvial Deposit & Proximity to Canal:*** It is submitted that the balance work in CHP and Wagon Tippler Area is getting delayed due to delay in civil activity because the Wagon tippler complex and its connecting Transfer Point-23 and conveyor-30 tunnel portion got delayed due to reasons beyond the reasonable control of the petitioner. The Wagon Tippler complex, and its connecting Transfer Point-23 and conveyor-30 tunnel portion have proximity towards plant boundary wall/ natural canal, which is flowing just outside the boundary wall and in order to maintain safe slope protection of excavation area, projected excavation width was overlying on the existing ash pipelines, plant boundary wall as well as the natural canal, the drawing of the area is submitted in present petition. Subsequently, the Petitioner submitted that it reworked the process and proceeded for Tunnel excavation with contiguous piling methodology instead of open excavation, to retain the soil & to safeguard the boundary wall and natural Canal. This has delayed the engineering activities of the system by almost eight (8) months and the revised excavation methodology would require additional twelve (12) months for the civil works. Further, additional piles with king post support and interconnecting structural bracing, methodology was adopted for excavation also, the documents from the contractor regarding the matter are attached. In view of these geological surprises & change in excavation methodology, the execution of the said system is taking more time. Accordingly, the Commission may be pleased to relax the cut-off date and allow the capitalization of the said system up to 31.3.2022.

(III) ***IR issues in Wagon Tippler & Railway Siding Area:*** It is submitted that there was “intermittent delay” of around 10 months due to obstruction to construction work in the Wagon Tippler, Railway Siding and crusher house area, by the local villagers. Further, it is submitted that due to the frequent threatening and disruptions caused by the local villagers in the area, NTPC couldn't remove the posts, railway gate etc., as desired by the Rites for laying the track and made the front available. The villagers resorted to threats to workers, due to which the work had to be stopped. It was started only after resolving the matter after intense negotiations. The communications regarding the matter on this issue are attached in present Petition.

(IV) ***Sewage Treatment Plant and associated pipelines:*** Further, it is humbly submitted that, poor response of contractors towards some packages i.e Sewage Treatment Plant and associated pipelines, resulted in delay in start of these packages. Further, the progress got entangled again due to COVID pandemic lockdown. Consequently, these works are facing considerable delay and are likely to be completed by March 2022.

(V) ***Excavation activities in the CHP area:*** It is submitted that some excavation activities especially in the CHP area are under progress (although slow due to COVID Pandemic and un-availability of adequate workforce), and the Petitioner is trying its level best to finish the required excavation and concreting up to the ground level before advent of Monsoons. However, it is presumed that if the excavation and concreting up to the ground level can’t be completed by July 2021, then the completion of these works may further spill beyond March 2022 up to July-September 2022.

14. The Petitioner, on account of the above reasons, has prayed that the works claimed be allowed to be capitalized for purpose of tariff during the 2019-24 tariff period by relaxing the cut-off date beyond 30.9.2020 by eighteen (18) months i.e. up to 31.3.2022 in exercise of Commission’s power under Regulation 76 (Power to Relax) and Regulation 77 (Power to Remove Difficulty) of the 2019 Tariff Regulations.

15. The Commission had condoned the time overrun of 116 days considering the COD of the generating station vide its order dated 6.12.2019 in Petition No. 197/GT/2017. In the present petition, the Petitioner has prayed for the extension of

cutoff date on account of the consequent and cascading effect of delay in achieving COD and other reasons as stated above in paragraph 13 above.

16. We observe that the Petitioner has faced challenges in the execution of works namely, the disruption of construction activity, delay in connecting Transfer Point-23 and conveyor-30 tunnel portion at the Wagon tippler complex, poor response of contractors towards some packages i.e Sewage Treatment Plant and associated pipelines and delay in the excavation and concreting up to the ground level. Keeping in view that these factors were beyond the control of the Petitioner, we are inclined to consider the additional capitalization claimed by the Petitioner after cut-off date, on a case to case basis, under Regulation 24(1)(b) of the 2019 Tariff Regulations, in exercise of the power to relax under Regulation 76 (Power to Relax) of the 2019 Tariff Regulations.

17. The Petitioner in Form-9A has claimed additional capital expenditure towards EPC Package for this generating station, consisting of Main Plant/ BOP Civil/ Switchyard Civil, BOP Package (CW System, Miscellaneous pumps, Station Piping, WTP, Electrical System, HVAC, FDPS, AHP System, CHP system) and other assets such as Coal Transportation system, Site Development, Canal Lining, Ash Dyke raising (Arkha), Design Supply and Installation of CCTV System (as given in table under paragraph 8 above) during 2019-20 and 2020-21, under Regulation 24(1)(b) of the 2019 Tariff Regulations. As stated, these assets/works, which are within the original scope of work of the project, are spill over works to be capitalized in a phased manner till 2020-21. Since these balance works could not be undertaken for reasons beyond the control of the Petitioner as stated above, we are

inclined to allow the additional capital expenditure till 2020-21, under Regulation 24(1)(b) of the 2019 Tariff Regulations, in exercise of the power to relax under Regulation 76 (Power to Relax) of the 2019 Tariff Regulations.

18. The Petitioner has also claimed additional capital expenditure towards 'Township and Colony' (as given in table under paragraph 8 above) as balance works within the original scope of work which have been deferred for execution. It is noticed that the Petitioner has claimed spillover of these works for capitalization in phased manner from 2019-20 till 2022-23 i.e beyond the cutoff date. Since the balance works, which are within the original scope of work, could not be undertaken for reasons beyond the control of the Petitioner, as stated above, we allow the additional capital expenditure in respect of the said work under Regulation 24(1)(b) of the 2019 Tariff Regulations, in exercise of the power to relax under Regulation 76 (Power to Relax) of the 2019 Tariff Regulations.

HFO to LDO conversion in Stage-IV

19. The Petitioner has claimed projected additional capital expenditure of Rs.250.00 lakh in 2020-21 and Rs.69.00 lakh in 2021-22 under Regulation 26(1)(b) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that the Hon'ble Supreme Court of India vide its order dated 24.10.2017 in Writ Petition (Civil) No 13029/1985 has banned use of Furnace Oil in States of UP, Haryana and Rajasthan and has ordered switching to Light Diesel Oil (LDO) in thermal power plants. In view of this, the Petitioner has taken up the fuel system conversion its various power stations. The Petitioner has therefore prayed to allow the additional capitalization under Regulation 24(1)(e) of 2019 Tariff Regulations.

20. We have considered the matter. It is noticed that the additional capital expenditure claimed by the Petitioner is in terms of the order dated 24.10.2017 of the Hon'ble Supreme court in Writ Petition Civil No.13029/1985 with IA Nos. 58050 and 58052/2018 wherein, the application of the Petitioner to use alternate fuels such as Low Sulphur Heavy Stock (LSHS) or Light Diesel Oil (LDO) was allowed as under:

> *"The prayer in this application is to allow the National Thermal Power Corporation Ltd. To use alternate fuels such as Low Sulphur Heavy Stock (LSHS) along with Light Diesel Oil (LDO) in consonance with the order dated 13.12.2017 in substitution of Furnace Oil.*
> *The learned Amicus has no objection to the application being allowed.*
> *The applications are allowed."*

21. In view of above, the projected additional capital expenditure of Rs.250.00 lakh in 2020-21 and Rs.69.00 lakh in 2021-22 for asset/work relating to HFO to LDO conversion is allowed under Regulation 26(1)(b) of the 2019 Tariff Regulations. The Petitioner is directed to furnish de-capitalized value of existing asset which is being converted/replaced by LDO system at the time of truing up. The Petitioner is also directed to furnish the savings in respect of auxiliary power consumption and station heat rate as HFO heating system shall not be required when LDO system is in use by the generating station.

Replacement of Chlorine System by CLO2

22. The Petitioner has claimed projected additional capital expenditure of Rs.44.25 lakh in 2019-20, Rs.88.50 lakh in 2020-21 and Rs.715.49 lakh in 2021-22 under Regulation 26(1)(b) read with Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that at present in the generating station, Chlorine gas is being dozed directly at various stages of water treatment to maintain water quality and to inhibit organic growth in the water retaining structures/

equipment such as clarifiers, storage tanks, cooling towers, condenser tubes & piping etc. Chlorine dosing is done from chlorine stored in cylinders/ tonners. Chlorine gas is very hazardous and may prove fatal in case of leakage; handling and storage of same involves risk to the life of public at large. In the interest of public safety, the chlorine dozing system is now being replaced by Chlorine Dixoide (ClO_2) system, which is much safer and less hazardous than chlorine. In the proposed scheme ClO_2 shall be produced on site by use of commercial grade HCl and sodium chlorite. As ClO_2 is generated at site, it avoids handling and storage risk. Further, at Kudgi NTPC project Department of Factories, Boiler, Industrial Safety and Health, Govt of Karnataka has directed the Petitioner to replace highly hazardous gas chlorination system with ClO_2 system. SPCB, Odisha while issuing consent to establish in case of Darlipalli Station has asked the Petitioner to explore the possibility of installing ClO_2 system instead of Chlorine gas system (The Petitioner has attached the relevant documents at Annexure-A of the petition). For safety of public the Petitioner is replacing the chlorination system with ClO_2 system. Accordingly, the Commission may allow the same under Regulations 26(1)(b) and 26(1)(d) of the 2019 Tariff Regulations.

23. We have examined the matter. The Petitioner has claimed projected additional capitalization of Rs.44.25 lakh in 2019-20, Rs.88.50 lakh in 2020-21 and Rs.715.49 lakh in 2021-22 for ClO_2 system under Regulation 26(1)(b) i.e. 'Change in law' and under Regulation 26(1)(d) i.e. 'expenditure required for safety and security of the plant as advised or as per directions of appropriate governmental agency or statutory authorities'. Though the Petitioner has contended that the chlorine dozing system is to be replaced by Chlorine Dioxide (ClO_2) system, in the interest of public safety, it has not

demonstrated that the projected expenditure is on account of ‘change in law’ or for compliance with the existing law. Similarly, the Petitioner has also not enclosed any documentary evidence indicating that the projected expenditure is required for safety and security of the plant that is based on the advice and or directions of the appropriate Governmental agency or statutory authorities. In view of this, the projected additional capitalization claimed by the Petitioner on this count is not allowed.

Roof top solar on stage-IV buildings

24. The Petitioner has claimed projected additional capital expenditure of Rs.160.00 lakh in 2019-20 and Rs.115.30 lakh in 2020-21, under Regulation 26(1)(b) read with Regulation 26(1)(e) of the 2019 Tariff Regulations. In justification for the same the Petitioner submitted that these works are part of original scope of work & were awarded under policy framework of the Government of India to achieve its ambitious 2022 target for grid connected rooftop solar projects. This project supports the shift to renewable energy by installation of at least 500 KW of rooftop solar photovoltaic unit in this generating station and beneficiaries can, over time, enjoy a financial gain on account of APC reduction.

25. The matter has been considered. It does not appear from the submissions of the Petitioner that the additional capitalization for this asset/work forms part of the original scope of work. The Petitioner has also not justified the claim, duly supported with documentary evidence like notification of change in law/compliance with existing law or directions of statutory authorities mandating the need for this asset/work. It is also not clear as to what benefits/ advantages, the beneficiaries would derive on account of installation of the said asset to augment the existing DCS power supply. In this

background, the additional capital expenditure claimed by the Petitioner is not allowed.

26. Based on above, the summary of projected additional capital expenditure allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Works within original scope, change-in-law etc. eligible for ROE at Normal Rate					
EPC Package	21600.00	6400.00	0.00	0.00	0.00
Coal Transportation system	956.00	498.00	0.00	0.00	0.00
Township and Colony	1126.11	2010.04	722.20	400.00	0.00
Site Development	0.00	0.00	0.00	0.00	0.00
Canal Lining	50.00	200.00	0.00	0.00	0.00
Ash Dyke raising (Arkha)	1000.00	392.00	0.00	0.00	0.00
Design Supply and Installation of CCTV system	28.70	0.00	0.00	0.00	0.00
HFO to LDO conversion in Stage-IV	0.00	250.00	69.00	0.00	0.00
Replacement of Chlorine System by CLO2	0.00	0.00	0.00	0.00	0.00
Roof Top Solar on Stage-IV buildings	0.00	0.00	0.00	0.00	0.00
Sub-Total (A)	**24760.81**	**9750.04**	**791.20**	**400.00**	**0.00**
Works beyond original scope excluding add-cap due to change-in-law eligible for ROE at Weighted Average Rate of Interest (WAROI)					
Sub-Total (B)	0.00	0.00	0.00	0.00	0.00
Total Additional capital expenditure allowed (on projected basis) (A+B)	**24760.81**	**9750.04**	**791.20**	**400.00**	**0.00**

<u>Capital Cost allowed</u>

27. Based on the above, the capital cost allowed for the purpose of tariff for the 2019-24 tariff period is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening Capital Cost	247434.50	272195.31	281945.35	282736.55	283136.55
Add: Additional capital expenditure	24760.81	9750.04	791.20	400.00	0.00
Closing Capital Cost	**272195.31**	**281945.35**	**282736.55**	**283136.55**	**283136.55**
Average Capital Cost	259814.91	277070.33	282340.95	282936.55	283136.55

Debt Equity Ratio

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

"18. Debt-Equity Ratio: (1) For a new projects, 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."

29. The Commission vide its order dated 16.3.2022 in Petition No. 364/GT/2020 had considered the gross loan and equity of Rs.173204.15 lakh and Rs.74230.35 lakh, respectively as on 31.3.2019. Accordingly, the gross loan and equity amounting to Rs.173204.15 lakh and Rs.74230.35 lakh has been considered as gross loan and equity as on 1.4.2019. The debt-equity ratio of 70:30 has been considered on the admitted additional capital expenditure for the purpose of tariff. Accordingly, debt-equity ratio is worked out as under:

Asset	As on 1.4.2019		Net Additional Capitalization during 2019-24 tariff period		As on 31.3.2024	
	Amount	**%**	**Amount**	**%**	**Amount**	**%**
Debt	173204.15	70%	24991.44	70%	198195.59	70%
Equity	74230.35	30%	10710.62	30%	84940.97	30%
Total	**247434.50**	**100%**	**35702.06**	**100%**	**283136.55**	**100%**

Return on Equity

30. 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 due to Change in Law shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system;

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."

31. 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%.

(3) 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."

32. The Petitioner has claimed Return on Equity (ROE) considering base rate of 15.50% and effective tax rate of 17.472% (i.e. MAT Rate of 15% + Surcharge of 12% + HEC of 4%) for the 2019-24 tariff period. Since, the additional capital expenditure approved above is under original scope of work, the same has been considered for the purpose of tariff, subject to truing up. Accordingly, ROE has been worked out as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Normative Equity - Opening (A)	74230.35	81658.59	84583.61	84820.97	84940.97
Addition of Equity due to additional capital expenditure (B)	7428.24	2925.01	237.36	120.00	0.00
Normative Equity - Closing (C) = (A + B)	81658.59	84583.61	84820.97	84940.97	84940.97
Average Normative Equity (D) = [(A+C)/2]	77944.47	83121.10	84702.29	84880.97	84940.97
Return on Equity (Base Rate) (E)	15.50%	15.50%	15.50%	15.50%	15.50%
Effective Tax Rate (F)	17.472%	17.472%	17.472%	17.472%	17.472%
Rate of Return on Equity (Pre-tax) (G) = [(E)/(1-F)]	18.782%	18.782%	18.782%	18.782%	18.782%
Return on Equity (Pre-tax) – annualized (H) = (D x G)	**14639.53**	**15611.81**	**15908.78**	**15942.34**	**15953.61**

<u>Interest on loan</u>

33. 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 de-capitalization 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.

(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."

34. The Petitioner has claimed tariff considering Weighted Average Rate of Interest (WAROI) of 6.918% in 2019-20, 6.917% in 2020-21, 6.903% in 2021-22, 6.843% in 2022-23 and 6.694% in 2023-24 and the same has been considered. Interest on loan has been worked out as under:

i) The gross normative loan amounting to Rs.173204.15 lakh has been considered as on 1.4.2019;

ii) Cumulative repayment of Rs.19049.38 lakh as on 31.3.2019 as considered in order dated 16.3.2022 in Petition No. 364/GT/2020 has been considered as on 1.4.2019;

iii) Accordingly, the net normative opening loan as on 1.4.2019 works out to Rs.154154.76 lakh;

iv) Addition to normative loan on account of additional capital expenditure approved above has been considered;

v) Depreciation allowed has been considered as repayment of normative loan during the respective year of the 2019-24 tariff period;

35. Necessary calculation of interest of loan is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Gross opening loan (A)	173204.15	190536.72	197361.75	197915.59	198195.59
Cumulative repayment of loan up to previous year (B)	19049.38	32904.38	47679.54	62735.77	77823.76
Net Loan Opening (C)=(A-B)	154154.76	157632.34	149682.20	135179.82	120371.83
Addition due to additional capital expenditure (D)	17332.57	6825.03	553.84	280.00	0.00
Repayment during the year (E)	13854.99	14775.16	15056.23	15087.99	15098.65
Net Loan Closing (F)= (C+D-E)	157632.34	149682.20	135179.82	120371.83	105273.18
Average Loan (G)= [(C+F)/2]	155893.55	153657.27	142431.01	127775.82	112822.50
Weighted Average Rate of Interest of loan (H)	6.918%	6.917%	6.903%	6.843%	6.694%
Interest on Loan (I) = (GxH)	**10785.34**	**10628.32**	**9831.30**	**8744.08**	**7552.68**

Depreciation

36. 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 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 asset shall be considered depreciable;

Provided that in case of hydro generating station, 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 up to 31.3.2019 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, 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."

37. The cumulative depreciation amounting to Rs.19049.38 lakh as on 31.3.2019 as considered in order dated 16.3.2022 in Petition No. 364/GT/2020 has been considered as on 1.4.2019, for the purpose of tariff. The balance depreciable value as on 31.3.2019 is Rs.214784.03 lakh. Since, as on 1.4.2019, the used life of the generating station is 1.50 years, which is less than 12 years from the effective station COD of 30.9.2017, the depreciation for the period 2019-24 has been calculated by applying weighted average rate of depreciation (WAROD). The Petitioner has claimed depreciation considering WAROD of 5.333% (enclosed as Annexure-I) for the 2019-24 tariff period. While calculating WAROD the Petitioner has considered rate of depreciation of 5.28% towards electrical installations and 9.50% towards construction equipment as against rate of 6.33% and 5.28%, respectively as per 2019 Tariff Regulations. However, considering

the fact that WAROD is subject to truing up and for the present WAROD as claimed by the Petitioner has been considered for the present petition. Necessary calculation of depreciation is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Average Capital Cost (A)	259814.91	277070.33	282340.95	282936.55	283136.55
Value of freehold land included in average capital cost (B)	0.00	0.00	0.00	0.00	0.00
Value of software and IT equipment included in average capital cost (C)*	0.00	0.00	0.00	0.00	0.00
Depreciable Value (D) = [(A-B-C)x90%+(C)]	233833.41	249363.30	254106.86	254642.90	254822.90
Remaining depreciable value at the beginning of the year (E) = [(D) – (Cumulative depreciation at the end of the preceding period i.e. 'J')]	214784.03	216458.92	206427.32	191907.13	176999.14
Number of completed years at the beginning of the year (F)	1.50	2.50	3.50	4.50	5.50
Balance useful life at the beginning of the year (G) = (25-F)	23.50	22.50	21.50	20.50	19.50
Weighted Average Rate of Depreciation (H)	5.333%	5.333%	5.333%	5.333%	5.333%
Depreciation during the year (I) = (AxH)	**13854.99**	**14775.16**	**15056.23**	**15087.99**	**15098.65**
Cumulative depreciation at the end of the year (J) = [(I)+ ('J' of previous period i.e. Cumulative depreciation at the end of previous period)]	32904.38	47679.54	62735.77	77823.76	92922.41

<u>O&M Expenses</u>

38. Regulation 35(1)(1) of the 2019 Tariff Regulations provides for the following O&M expenses:

> *"(35)(1) Thermal Generating Station: Normative Operation and Maintenance expenses of thermal generating stations shall be as follows:*
>
> *Coal based and lignite fired (including those based on Circulating Fluidised Bed Combustion (CFBC) technology) generating stations, other than the generating stations or units referred to in clauses (2), (4) and (5) of this Regulation:*

(in Rs lakh/MW)

Year	200/210/ 250 MW Series	300/ 330/ 350 MW Series	500 MW Series	600 MW Series	800 MW Series and above
FY 2019-20	32.96	27.74	22.51	20.26	18.23
FY 2020-21	34.12	28.71	23.30	20.97	18.87
FY 2021-22	35.31	29.72	24.12	21.71	19.54
FY 2022-23	36.56	30.76	24.97	22.47	20.22
FY 2023-24	37.84	31.84	25.84	23.26	20.93

Provided that where the date of commercial operation of any additional unit(s)of a generating station after first four units occurs on or after 1.4.2019, the O&M expenses of such additional unit(s) shall be admissible at 90% of the operation and maintenance expenses as specified above;
xxx
Provided also that operation and maintenance expenses of generating station having unit size of less than 200 MW not covered above shall be determined on case to case basis."

39. The O&M expenses claimed by the Petitioner is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Normative O&M expenses claimed under Regulation 35(1)(1) of the 2019 Tariff Regulations	11255.00	11650.00	12060.00	12485.00	12920.00
O&M expenses claimed under Regulation 36(1)(6) of the 2019 Tariff Regulations					
- Water Charges	148.03	148.03	148.03	148.03	148.03
- Security Expenses	1225.63	1346.91	1480.25	1626.84	1788.00
- Capital Spares consumed	0.00	0.00	0.00	0.00	0.00
Total O&M Expenses	**12628.66**	**13144.94**	**13688.28**	**14259.87**	**14856.03**

40. The matter has been considered. As stated earlier, the generating station, has been implemented as an expansion to Feroze Gandhi Unchahar TPS-I (2 x 210 MW), Feroze Gandhi Unchahar TPS-II (2 x 210 MW) and Feroze Gandhi Unchahar TPS-III (1 x 210 MW), with a capacity of 500 MW comprising of one unit, with the date of commercial operation as 30.9.2017. No new units have been added on or after 1.4.2019. Therefore, in terms of Regulation 35(1) of the 2019 Tariff Regulations, the normative O&M expenses as claimed by the Petitioner as above, has been allowed for the 2019- 24 tariff period.

Water Charges

41. The first proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations provides as under:

> *(6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:*
>
> *Provided that water charges shall be allowed based on water consumption depending upon type of plant and type of cooling water system, subject to prudence check. The details regarding the same shall be furnished along with the petition;*
>
> *xxxxx.*

42. The actual water charges claimed by the Petitioner in Petition No. 364/GT/2020 for the 2014-19 tariff period and allowed by the Commission in its order date 16.3.2022 is as under:

(Rs. in lakh)

	2017-18	2018-19
Water charges claimed	19.99	64.25
Water charges allowed	19.99	64.25

43. In terms of the first proviso to Regulations 35(1)(6) of the 2019 Tariff Regulations, water charges shall be allowed separately based on the water consumption depending upon the type of plant, type of cooling water system etc. subject to prudence check. The details in respect of water charges for the 2019-24 tariff period as furnished by the Petitioner is as under:

Description	Remarks
Type of plant	Coal
Type of cooling water system	Closed Cycle
Yearly allocation of water for VSTPS*	33.87/Year
Rate of water charges*	Rs.4.37lac/Cusec/year
Total water charges**	Rs.148.03 Lacs

44. The Petitioner has claimed water charges for the 2019-24 tariff period, as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
148.03	148.03	148.03	148.03	148.03

45. However, the Petitioner has not provided any justification for the variation in claim made on actual basis for 2019-20 against amount allowed for 2018-19 vide order dated 16.3.2022 in Petition No. 364/GT/2020. As the Petitioner has claimed an escalated amount on projection basis, we are not inclined to allow the claim of the Petitioner. However, the Petitioner shall furnish the details of the actual water consumption at the time of truing up of tariff. For the present, we consider the actual water charges of Rs.64.25 lakh allowed for the year 2018-19 for each year of the 2019-24 tariff period. Accordingly, the water charges claimed and allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Water charges claimed	148.03	148.03	148.03	148.03	148.03
Water charges allowed	64.25	64.25	64.25	64.25	64.25

Security Expenses

46. The second proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations provides as under:

> *"6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:*
>
> *Xxxx*
>
> *Provided further that the generating station shall submit the assessment of the security requirement and estimated expenses;*
>
> *Xxx"*

47. The security expenses claimed by the Petitioner for the 2019-24 tariff period is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1225.63	1346.91	1480.25	1626.84	1788.00

48. The Petitioner has submitted that the claim towards 'security expenses' is based on the estimated expenses for the 2019-24 tariff period and the same shall be subject to retrospective adjustment, based on actuals at the time of truing up of tariff. The Petitioner has, however, not furnished the basis for the said claim for security expenses for the 2019-24 tariff period. Considering the fact that security expenses for the generating stations is required to be allowed separately in terms of the second proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations, the claim of the Petitioner, as projected, is allowed. The Petitioner is directed to furnish the actual security expenses incurred, under each head, at the time of truing up of tariff of the generating station for the 2019-24 tariff period.

Capital Spares

49. The Petitioner has not claimed capital spares during the 2019-24 tariff period. The Petitioner has, however, submitted that the same shall be claimed based on actual consumption of spares during the 2019-24 tariff period at the time of truing up in terms of proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations. Accordingly, the same has not been considered in this order. The claim of the Petitioner, if any, towards capital spares at the time of truing up shall be considered on merits, after prudence check.

50. Accordingly, the total O&M expenses including water charges and security expenses, as claimed by the Petitioner and allowed to the generating station for the 2019-24 tariff period is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Normative O&M expenses claimed under Regulation 35(1)(1) of the 2019 Tariff Regulations **(a)**	11255.00	11650.00	12060.00	12485.00	12920.00
Normative O&M expenses allowed under Regulation 35(1)(1) of the 2019 Tariff Regulations (b)	11255.00	11650.00	12060.00	12485.00	12920.00
Water Charges claimed under Regulation 35(1)(6) of the 2019 Tariff Regulations **(c)**	148.03	148.03	148.03	148.03	148.03
Water Charges allowed under Regulation 35(1)(6) of the 2019 Tariff Regulations (d)	64.25	64.25	64.25	64.25	64.25
Security Expenses claimed under Regulation 35(1)(6) of the 2019 Tariff Regulations **(e)**	1225.63	1346.91	1480.25	1626.84	1788.00
Security Expenses allowed under Regulation 35(1)(6) of the 2019 Tariff Regulations (f)	1225.63	1346.91	1480.25	1626.84	1788.00
Total O&M expenses claimed under Regulation 35 of the 2019 Tariff Regulations (a + c + e)	12628.66	13144.94	13688.28	14259.87	14856.03
Total O&M expenses allowed under Regulation 35 of the 2019 Tariff Regulations (b + d + f)	**12544.88**	**13061.16**	**13604.50**	**14176.09**	**14772.25**

Additional expenditure on Emission Control System

51. The Petitioner has submitted that it is in the process of installing the Emission Control Systems (ECS) in compliance to the revised emission standards as notified by the MOEFCC vide notification dated 7.12.2015, as amended. It has submitted that the completion of these schemes in compliance to the revised emission norms will affect the Auxiliary Power Consumption (APC), Heat Rate, and O&M expenses etc. In addition, the Petitioner has submitted that the availability of the unit/station would also be affected due to shutdown of the units for installation of ECS. In above matter, the Petitioner had filed a separate petition i.e. Petition No. 553/MP/2020 for approval of additional expenditure on account of installation of various Emission Control Systems, for this generating station. The Commission vide common order dated

17.11.2021 has disposed of the same petition. Therefore, the claim of the Petitioner shall be guided by the decision of the Commission in order dated 17.11.2021 in Petition No.553/MP/2020.

Additional expenditure towards Fly Ash transportation

52. The Petitioner has claimed recovery of additional expenditure of Rs.24.15 lakh in 2019-20 and Rs.46.74 lakh in 2020-21 on account of fly ash transportation charges after adjusting the revenue earned from sale of ash. The Petitioner has submitted that pursuant to MOEF&CC notification dated 25.1.2016 the Petitioner had filed Petition No. 172/MP/2016 seeking of recovery of additional expenditure incurred due to sharing of fly ash transportation cost as "Change in law" event. The Commission vide its order dated 5.11.2018 in Petition No. 172/MP/2016 recognized notification dated 25.1.2016 as 'Change in Law' event and admitted the claims that is amount spent over and above ash sale fund on account of ash transportation and has directed as under:

> *"31. Accordingly, we in exercise of the regulatory power hold that the actual additional expenditure incurred by the Petitioner towards transportation of ash in terms of the MOEFCC Notification is admissible under "Change in Law" as additional O&M expenses. However, the admissibility of the claims is subject to prudence check of the following conditions on case-to-case basis for each station:*
>
> *a) Award of fly ash transportation contract through a transparent competitive bidding procedure. Alternatively, the schedule rates of the respective State Governments, as applicable for transportation of fly ash.*
>
> *b) Details of the actual additional expenditure incurred on Ash transportation after 25.1.2016, duly certified by auditors.*
>
> *c) Details of the Revenue generated from sale of fly ash/ fly ash products and the expenditure incurred towards Ash utilisation up to 25.1.2016 and from 25.1.2016 to till date, separately.*
>
> *d) Revenue generated from fly Ash sales maintained in a separate account as per the MoEF notification."*

53. The Petitioner has submitted that the actual ash transportation expenses incurred for the generating station in 2019-20 and 2020-21, after adjustment of the

revenue from sale of ash is as under:

(Rs. in lakh)

Year	Ash Sale Fund as on 1.4.2019	Revenue from sale of ash	Ash Sale Fund available for meeting transportation expenses	Ash transportation expenses	Ash transportation met out of Ash Sale Fund	Ash transportation expenses to be recovered from beneficiaries
	A	**B**	**C = (A+B)**	**D**	**E = D (if C>=D) = C (if C<D)**	**F = 0 (if C>=D) = D-C (if C<D)**
2019-20	-	4.65	4.65	28.79	4.65	24.15
2020-21	-	4.28	4.28	51.02	4.28	46.74

54. The Petitioner has further submitted that ash transportation expenses are recurring in nature and if recovery of the same is to be allowed at the time of truing up, it would attract carrying cost thereon. The Petitioner has accordingly prayed to allow reimbursement of above transportation charges for the year 2019-20 and 2020-21, subject to truing up. The Petitioner has also submitted that for balance tariff period 2021-24 billing and recovery of ash transportation expenditure may be allowed provisionally on monthly basis based on self-certification subject to truing up. The Petitioner has added that the issue of monthly recovery and the procedure for recovery of costs is no more res-integra as this Commission in its order dated 22.3.2021 in Petition No. 405/MP/2019 (*GKEL & Anr. v. DHBVNL & Ors)* had devised a mechanism for the generator therein to recover future expenditure incurred on transportation of fly ash, wherein, the Commission has directed recovery of expenditure on transportation of fly ash on a monthly basis with reconciliation on an annual basis. The Petitioner has prayed that a similar procedure may also be made applicable in the case of the Petitioner.

55. We have examined the matter. The Petitioner has claimed of Rs.24.15 lakh and Rs.46.74 lakh in 2019-20 and 2020-21 respectively. However, we note that the

Petitioner has filed Petition No. 205/MP/2021 seeking reimbursement of fly ash transportation charges in respect of its various generating stations. The Petitioner has raised similar issues in the Petition No. 205/MP/2021 of higher liability for the Respondents therein on account of interest burden and also cash flow issues that may be faced by the Petitioner. As the said petition is pending, the claim of the Petitioner has not been considered in this order. The reimbursement towards transportation of fly ash shall, therefore, be governed by the decision of the Commission in Petition No. 205/MP/2021.

<u>Operational Norms</u>

56. The Petitioner has considered following norms of operation, for the purpose of tariff, for the 2019-24 tariff period:

Normative Annual Plant Availability Factor (NAPAF) (%)	85
Heat Rate (kCal/kwh)	2383.78
Auxiliary Power Consumption (%)	6.25
Specific Oil Consumption (ml/kwh)	0.50

Normative Annual Plant Availability Factor

57. Regulation 49(A) of the 2019 Tariff Regulations provides as under:

*"**(A) Normative Annual Plant Availability Factor (NAPAF)***

(a) For all thermal generating stations, except those covered under clauses (b), (c), (d), & (e) - 85%;

xxx."

58. Since the Petitioner has considered NAPF of 85% in terms of Regulation 49(A)(a) of the 2019 Tariff Regulations, the same is allowed.

Gross Station Heat Rate (kCal/kWh)

59. Regulation 49(C)(b)(i) of 2019 Tariff Regulations provides as under:

"(b) Thermal Generating Stations achieving COD on or after 1.4.2009:

(i) For Coal-based and lignite-fired Thermal Generating Stations:

1.05 X Design Heat Rate (kCal/kWh)

Where the Design Heat Rate of a generating unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating (Kg/cm2)	*150*	*170*	*170*
SHT/RHT (0C)	*535/535*	*537/537*	*537/565*
Type of BFP	*Electrical Driven*	*Turbine Driven*	*Turbine Driven*
Max Turbine Heat Rate (kCal/kWh)	*1955*	*1950*	*1935*
Min Boiler Efficiency			
Sub-Bituminous Indian Coal	*0.86*	*0.86*	*0.86*
Bituminous Imported Coal	*0.89*	*0.89*	*0.89*
Max Design Heat Rate (kCal/kWh)			
Sub-Bituminous Indian Coal	*2273*	*2267*	*2250*
Bituminous Imported Coal	*2197*	*2191*	*2174*

Pressure Rating (Kg/cm2)	*247*	*247*	*270*	*270*
SHT/RHT (0C)	*537/565*	*565/593*	*593/593*	*600/ 600*
Type of BFP	*Turbine Driven*	*Turbine Driven*	*Turbine Driven*	*Turbine Driven*
Max Turbine Heat Rate (kCal/kWh)	*1900*	*1850*	*1810*	*1800*
Min Boiler Efficiency				
Sub-Bituminous Indian Coal	*0.86*	*0.86*	*0.865*	*0.865*
Bituminous Imported Coal	*0.89*	*0.89*	*0.895*	*0.895*
Max Design Heat Rate (kCal/kWh)				
Sub-Bituminous Indian Coal	*2222*	*2151*	*2105*	*2081*
Bituminous Imported Coal	*2135*	*2078*	*2034*	*2022*

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design heat rate of the unit of the nearest class shall be taken:

Provided also that where heat rate of the unit has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the design heat rate of the unit shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency:

Provided also that where the boiler efficiency is lower than 86% for Sub-bituminous Indian coal and 89% for bituminous imported coal, the same shall be considered as 86% and 89% for Sub-bituminous Indian coal and bituminous imported coal respectively, for computation of station heat rate:

Provided also that maximum turbine cycle heat rate shall be adjusted for type of dry cooling system:

Provided also that in case of coal based generating station if one or more generating units were declared under commercial operation prior to 1.4.2019, the heat rate norms for those generating units as well as generating units declared under commercial operation on or after 1.4.2019 shall be lowest of the heat rate norms considered by the Commission during tariff period 2014-19 or those arrived at by above methodology or the norms as per the sub-clause (C)(a)(i) of this Regulation:

Provided also that in case of lignite-fired generating stations (including stations based on CFBC technology), maximum design heat rates shall be increased using factor for moisture content given in sub-clause (C)(a)(iv) of this Regulation:

Provided also that for Generating stations based on coal rejects, the Commission shall approve the Station Heat Rate on case to case basis.

Note: In respect of generating units where the boiler feed pumps are electrically operated, the maximum design heat rate of the unit shall be 40 kCal/kWh lower than the maximum design heat rate of the unit specified above with turbine driven Boiler Feed Pump."

60. The Petitioner vide affidavit dated 24.1.2019 has submitted that the Commission has prescribed boiler efficiency and turbine heat rate separately for deriving the unit heat rate where the Unit Heat Rate is not guaranteed by the suppliers. Further the Petitioner has submitted that the instant station was envisaged during the year 2013 and equipment' including SG and TG specifications for tendering or award was stipulated considering the boiler efficiency and the turbine heat rate as per the 2014 Tariff Regulations. Based on the same, the equipment's were ordered through competitive bidding and it was not possible for the Petitioner to specify the efficiency parameters at the time of finalizing the contracts on the instant station as per the efficiency parameters Further, the Petitioner has submitted that, if the boiler efficiency for working out the normative heat rate is considered as 86% instead of the actual design efficiency of 85.1 % the unit heat rate would be worked out to be 2246.51 kcal/kwh and the operating margin available over the design heat rate would be around 4% only which is less than the operating margin of 5% allowed in the 2019 Tariff

Regulations 2019. Moreover, it has submitted that boiler efficiency is largely a function of coal quality. As such, the Petitioner has prayed that the Gross Station Heat Rate (GSHR) may be allowed based on guaranteed turbine cycle heat rate of 1932 and boiler efficiency of 85.1% with operating margin of 5 % from the guaranteed design value.

61. Keeping in view that the GSHR specified by the Commission in the 2019 Tariff Regulations is based on the past performance data of thermal plants and after extensive stakeholder consultations, we find no reason to consider the prayer of the Petitioner for relaxation of SHR norm. Considering the ceiling limit of 86% and Turbine Cycle Heat Rate of 1932 (kcal/kWh), the GSHR for the period from COD till 31.3.2019, works out to 2358.84 kcal/kWh (1.05 x 1932/0.86) and the same is considered for the purpose of tariff.

Secondary Fuel Oil Consumption

62. Regulation 49(D)(a) of 2019 Tariff Regulations provides as under:

"(a) For Coal-based generating stations other than at (c) below: 0.50 ml/kWh"

63. The Petitioner has considered secondary fuel oil consumption of 0.50 ml/kWh, in terms of Regulation 49(D)(a) of the 2019 Tariff Regulations and hence the same is allowed.

Auxiliary Power Consumption

64. Regulation 49(E)(a) of 2019 Tariff Regulations provides as under:

"(a) For Coal-based generating stations except at (b) below:

S. No.	***Generating Station***	***With Natural Draft cooling tower or without cooling tower***
(i)	*200 MW series*	*8.50%*
(ii)	*300 MW and above*	
	Steam driven boiler feed pumps	*5.75%*
	Electrically driven boiler feed pumps	*8.00%*

Provided that for thermal generating stations with induced draft cooling towers and where tube type coal mill is used, the norms shall be further increased by 0.5% and 0.8%, respectively:

Provided further that Additional Auxiliary Energy Consumption as follows shall be allowed for plants with Dry Cooling Systems:

Type of Dry Cooling System	***(% of gross generation)***
Direct cooling air cooled condensers with mechanical draft fans	*1.0%*
Indirect cooling system employing jet condensers with pressure recovery turbine and natural draft tower	*0.5%*

Note: The auxiliary energy consumption for the unit capacity of less than 200 MW sets shall be dealt on case-to-case basis."

65. The Petitioner has considered auxiliary energy consumption of 6.25% during the 2019-24 tariff period as the generating station is coal based with steam driven Boiler Feed Pump and Induced draft cooling towers. Accordingly, in terms of Regulation 49(E)(a) of the 2019 Tariff Regulations, the claim of the Petitioner for auxiliary power consumption of 6.25% for the 2019-24 tariff period is allowed.

Interest on Working Capital

66. Sub-section (a) of clause (1) of Regulation 34 of the 2019 Tariff Regulations provides as under:

"34. Interest on Working Capital: (1) The working capital shall cover:

(a) For Coal-based/lignite-fired thermal generating stations:

(i) Cost of coal or lignite and limestone towards stock if applicable for 10 days for pit-head generating stations and 20 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(ii) Advance payment for 30 days towards cost of coal or lignite and limestone for generation corresponding to the normative annual plant availability factor;

(iii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor and in case of use of more than one secondary fuel oil cost of fuel oil stock for the main secondary fuel oil;

(iv) Maintenance spares @ 20% of operation and maintenance expenses including water charges and security expenses;

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

(vi) Operation and maintenance expenses including water charges and security expenses for one month.

*(b) **For Open-cycle Gas Turbine/Combined Cycle thermal generating stations**:*

(i) Fuel cost for 30 days corresponding to the normative annual plant availability factor duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;

(ii) Liquid fuel stock for 15 days corresponding to the normative annual plant availability factor and in case of use of more than one liquid fuel cost of main liquid fuel duly taking into account mode of operation of the generating stations of gas fuel and liquid fuel;

(iii) Maintenance spares @ 30% of operation and maintenance expenses including water charges and security expenses;

(iv) Receivables equivalent to 45 days of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor duly taking Order in Petition No. 410/GT/2020 Page 32 of 37 into account mode of operation of the generating station on gas fuel and liquid fuel; and

(v) Operation and maintenance expenses including water charges and security expenses for one month.

(c) For Hydro generating station (including Pumped Storage Hydro Generating Station) and transmission system:

(i) Receivables equivalent to 45 days of annual fixed cost;

(ii) Maintenance spares @ 15% of operation and maintenance expenses including security expenses; and

(iii) Operation and maintenance expenses including security expenses for one month.

(2) The cost of fuel in cases covered under sub-clauses (a) and (b) of clause (1) of this Regulation shall be based on the landed fuel cost (taking into account normative transit and handling losses in terms of Regulation 39 of these regulations) by the generating station and gross calorific value of the fuel as per actual weighted average for the third quarter of preceding financial year in case of each financial year for which tariff is to be determined:

Provided that in case of new generating station the cost of fuel for the first financial year shall be considered based on landed fuel cost (taking into account normative transit and handling losses in terms of Regulation 39 of these regulations) and gross calorific value of the fuel as per actual weighted average for three months as used for infirm power preceding date of commercial operation for which tariff is to be determined.

(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-24 in which the generating station or a unit thereof or the transmission system including communication system or element thereof as the case may be is declared under commercial operation whichever is later.

Provided that in case of truing-up the rate of interest on working capital shall be considered at bank rate as on 1st April of each of the financial year during the tariff period 2019-24.

(4) Interest on working capital shall be payable on normative basis notwithstanding that the generating company or the transmission licensee has not taken loan for working capital from any outside agency."

Fuel Cost and Energy Charges in Working Capital

67. Regulation 34(2) of the 2019 Tariff Regulations provides that the computation of cost of fuel as part of Interest on Working Capital (IWC) is to be based on the landed price and GCV of fuel as per actuals, for the third quarter of preceding financial year in case of each financial year for which tariff is to be determined.

68. Regulation 43(2) of the 2019 Tariff Regulations provides as under:

"(2) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

***(a) For coal based and lignite fired stations**:*

ECR = {(SHR – SFC x CVSF) x LPPF / CVPF + SFC x LPSFi + LC x LPL} x 100 / (100 – AUX)

***(b) For gas and liquid fuel based stations**:*

ECR = SHR x LPPF x 100 / {(CVPF) x (100 – AUX)}

Where,

AUX = Normative auxiliary energy consumption in percentage.

CVPF = (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations less 85 Kcal/Kg on account of variation during storage at generating station;

(b) Weighted Average Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, gas and liquid fuel based stations;

(c) In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio:

CVSF = Calorific value of secondary fuel, in kCal per ml;

ECR = Energy charge rate, in Rupees per kWh sent out;

SHR = Gross station heat rate, in kCal per kWh;

LC = Normative limestone consumption in kg per kWh;

LPL = Weighted average landed cost of limestone in Rupees per kg;

LPPF = Weighted average landed fuel cost of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed fuel cost of primary fuel shall be arrived in proportion to blending ratio);

SFC= Normative specific fuel oil consumption, in ml per kWh;

LPSFi= Weighted Average Landed Fuel Cost of Secondary Fuel in Rs./ ml during the month:

Provided that energy charge rate for a gas or liquid fuel based station shall be adjusted for open cycle operation based on certification of Member Secretary of respective Regional Power Committee during the month."

69. The Petitioner has claimed the cost of fuel component in working capital and Energy Charge Rate (ECR) based on followings:

(a) Operational norms as per the 2019 Tariff Regulations;

(b) Price and 'as received' GCV of coal (after reducing the same by 85 kCal/kWh in terms of above quoted Regulation) procured for the three months of October, 2018, November, 2018 and December, 2018.

(c) Price and GCV of secondary fuel oil for the three months of October, 2018, November, 2018 and December, 2018.

70. Accordingly, the Petitioner has claimed ECR of Rs.2.810 per kWh and following fuel cost component in working capital for the 2019-24 tariff period:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Cost of coal for 50 days	13316.39	13316.39	13316.39	13316.39	13316.39
Cost of secondary fuel oil for 2 months	147.07	146.67	146.67	146.67	147.07

71. On perusal of the Form-15 furnished by the Petitioner vide its affidavit dated 2.3.2020, it is observed that the Petitioner has included opening stock of coal and its corresponding value while computing weighted average price of coal for the month of October, 2018, November, 2018 and December, 2018. However, in terms of Regulation 34(2) of the 2019 Tariff Regulations the computation of cost of fuel as part of IWC is to be based on the landed price and GCV of fuel as per actuals, which means that only fuel received during these three months is only to be considered and no opening stock shall be included therein. Accordingly, the opening stock of coal and its corresponding

values have been excluded while computing the weighted average price and GCV of coal. For the present, the weighted average price and GCV of oil and coal as furnished by the Petitioner has been considered and allowed in the present petition. However, the Petitioner is directed to furnish Form-15, in respect of both coal and secondary fuel oil, only based on fuels received during the respective years of the 2019-24 tariff period at the time of truing up. Accordingly, the weighted average price and GCV of coal and oil claimed and allowed for the 2019-24 tariff period, subject to truing up is as under:

	Claimed	**Allowed**
Weighted average price of coal (Rs./MT)	4296.44	4296.44
Weighted average GCV of coal (kCal/kg) *	3914.56	3914.56
Weighted average price of oil (Rs./KL)	47273.94	47273.94
Weighted average GCV of oil (kCal/Ltr.)	9611.33	9611.33

* *Weighted average GCV of coal as received net of 85 kCal/kg.*

72. Accordingly, the fuel component in working capital, energy charges and ECR claimed and allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

	Claimed		**Allowed**	
	2019-20 & 2023-24	**2020-21 to 2022-23**	**2019-20 & 2023-24**	**2020-21 to 2022-23**
Cost of coal for 50 days	13316.39		13176.75	
Cost of secondary fuel oil for 2 months	147.07	146.67	147.07	146.67
Energy charges for 45 days	12093.24		11966.99	
ECR (*Rs./kWh)*	**2.810**		**2.781**	

73. The Petitioner, on a month-to-month basis, shall compute and claim the energy charges from the beneficiaries based on formulae given under Regulation 43 of the 2019 Tariff Regulations.

Working Capital for Maintenance Spares

74. The Petitioner in Form-O has claimed the maintenance spares in the working capital as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2525.73	2628.99	2737.66	2851.97	2971.21

75. Regulation 34(1)(a)(iv) of the 2019 Tariff Regulations provide for maintenance spares @ 20% of the O&M expenses (including water charges and security expenses). Accordingly, maintenance spares @ 20% of the O&M expenses (including the water charges and security expenses) allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2508.98	2612.23	2720.90	2835.22	2954.45

Working Capital for Receivables

76. In terms of Regulation 34(1)(a)(v) of the 2019 Tariff Regulations, the receivables equivalent to 45 days of capacity charges and energy charges is worked out and allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Variable Charges - for 45 days	11966.99	11966.99	11966.99	11966.99	11966.99
Fixed Charges - for 45 days	6901.50	7168.49	7177.15	7123.03	7034.11
Total	18868.49	19135.48	19144.14	19090.02	19001.10

Working Capital for O&M Expenses

77. The Petitioner in Form-O has claimed the O&M expenses for one (1) month in the working capital as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1052.39	1095.41	1140.69	1188.32	1238.00

78. Regulation 34(1)(a)(vi) of the 2019 Tariff Regulations provide for O&M expenses equivalent to one (1) month of the O&M expenses (including water charges and security expenses). Accordingly, O&M expenses equivalent to one (1) month of the O&M

expenses (including water charges and security expenses) allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
1045.41	1088.43	1133.71	1181.34	1231.02

79. In line with the Regulation 34(3) of the 2019 Tariff Regulations, the rate of interest on working capital is considered as 12.05% (i.e. 1year SBI MCLR of 8.55% as on 1.4.2019 + 350 bps) for the year 2019-20, 11.25% (i.e. 1year SBI MCLR of 7.75% as on 1.4.2020 + 350 bps) for the year 2020-21 and 10.50% (i.e. 1year SBI MCLR of 7.00% as on 1.4.2021 + 350 bps) for the period 2021-24.

80. Accordingly, Interest on working capital has been computed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Working capital towards cost of coal for stock - 20 days	5270.70	5270.70	5270.70	5270.70	5270.70
Working capital towards cost of coal for generation - 30 days	7906.05	7906.05	7906.05	7906.05	7906.05
Working capital for cost of secondary fuel oil - 2 months	147.07	146.67	146.67	146.67	147.07
Working capital for Maintenance Spares - 20% of O&M expenses	2508.98	2612.23	2720.90	2835.22	2954.45
Working Capital for Receivables – 45 days	18868.49	19135.48	19144.14	19090.02	19001.10
Working Capital for O&M expenses – 1 month	1045.41	1088.43	1133.71	1181.34	1231.02
Total Working Capital	**35746.69**	**36159.56**	**36322.16**	**36429.99**	**36510.39**
Rate of Interest	12.05%	11.25%	10.50%	10.50%	10.50%
Interest on Working Capital	**4307.48**	**4067.95**	**3813.83**	**3825.15**	**3833.59**

Annual Fixed Charges

81. Accordingly, the annual fixed charges approved for the 2019-24 tariff period for the generating station is summarized as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	13854.99	14775.16	15056.23	15087.99	15098.65
Interest on Loan	10785.34	10628.32	9831.30	8744.08	7552.68
Return on Equity	14639.53	15611.81	15908.78	15942.34	15953.61
Interest on Working Capital	4307.48	4067.95	3813.83	3825.15	3833.59
O&M Expenses	12544.88	13061.16	13604.50	14176.09	14772.25
Total	**56132.22**	**58144.40**	**58214.64**	**57775.65**	**57210.78**

Note: *(1) All figures are on 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.*

82. The annual fixed charges approved as above are subject to truing up in terms of Regulation 13 of the 2019 Tariff Regulations.

Application Fee and Publication expenses

83. The Petitioner has sought reimbursement of fee paid by it for filing the petition for the 2019-24 tariff period and for publication expenses and has submitted that the reimbursement of the same are in accordance with Regulation 70(1) of the 2019 Tariff Regulations. The Petitioner vide affidavit dated 1.6.2021 has submitted that it has published the notice of the tariff petition for 2019-24 tariff period, in the newspapers, in terms of the Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulation, 2004 and has further submitted that it has incurred an expenditure of Rs.163737.00 for the same. In terms of Regulation 70(1) of the 2019 Tariff Regulations the Petitioner shall be entitled for reimbursement of the filing fees and publication expenses in connection with the present petition, directly from the beneficiaries on pro-rata basis.

84. Annexure-I given hereunder forms part of the order.

85. Petition No. 3/GT/2021 is disposed of in terms of the above.

Sd/-	***Sd/-***	***Sd/-***
(Pravas Kumar Singh)	**(I.S Jha)**	**(P.K. Pujari)**
Member	**Member**	**Chairperson**

Annexure-I

Depreciation for the 2019-24 tariff period

(Rs. in lakh)

Sl. No.	Description	Rate of Depreciation (%)	Gros Block as on 31.3.2019	Depreciation
1	Roads, bridges, culverts & helipad	3.34	104.23	3.48
2	Main Plant Buildings	3.34	14733.16	492.09
3	Other Buildings	3.34	872.39	29.14
4	Temporary erection	100.00	377.93	377.93
5	Plant and machinery	5.28	267361.29	14116.68
6	Furniture and fixtures	6.33	555.57	35.17
7	Other Office Equipments	6.33	276.37	17.49
8	EDP, WP machines & SATCOM equipment	15.00	784.51	117.68
9	Vehicles including speedboats	9.50	1.63	0.16
10	Construction equipment	9.50	78.88	7.49
11	Electrical installations	5.28	36.37	1.92
12	Communication equipment	6.33	195.02	12.34
13	Hospital equipment	5.28	36.10	1.91
14	Software	15.00	68.29	10.24
	Total		**285481.75**	**15223.71**
	Weighted Average Depreciation Rate (%)			**5.333%**