**CENTRAL ELECTRICITY REGULATORY COMMISSION**
**NEW DELHI**

**Petition No. 2/GT/2021**

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

**Date of Order**: **1st June, 2022**

**In the matter of:**

Petition for approval of tariff of the National Capital Thermal Power Station Stage-II (980 MW) for the period from 1.4.2019 to 31.3.2024

**And**

**In the matter of:**

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

**Vs**

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

2. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road, Kingsway Camp,
   New Delhi-110 009

3. BSES Rajdhani Power Limited,
   BSES Bhawan, Nehru Place,
   New Delhi-110 019

4. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110 092 **…..Respondents**

**Parties present:**

Ms. Swapna Seshadri, Advocate, NTPC
Shri Anand K. Ganesan, Advocate, NTPC
Ms. Ritu Apurva, Advocate, NTPC
Shri Rahul Kinra, Advocate, BRPL

Shri Anupam Varma, Advocate, BRPL
Shri Aditya Gupta, Advocate, BRPL
Shri Utkarsh Singh, Advocate, BRPL
Shri Anand Shrivastava, Advocate, TPDDL
Ms. Megha Bajpeyi, BRPL
Shri Shohit Dhar, BRPL
Shri Gurmeet Deogen, BRPL
Shri Mohit Mudgal, Advocate, BYPL
Shri Manish Garg, UPPCL

## ORDER

This petition has been filed by the Petitioner, NTPC Limited for approval of tariff of National Capital Thermal Power Station Stage-II (980 MW) (hereinafter referred to as 'the generating station') for the 2019-24 tariff period in accordance with the provisions of the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2019 (hereinafter referred to as 'the 2019 Tariff Regulations').

2. The generating station with a capacity of 980 MW comprises of two units of 490 MW each with the COD of Unit-1 and Unit-2 as 31.1.2010 and 31.7.2010, respectively. Petition No. 324/GT/2014 was filed by the Petitioner for approval of tariff of the generating station for the 2014-19 tariff period, in accordance with the provisions of the 2014 Tariff Regulations. The Petitioner also filed Petition No. 377/TT/2014 for approval of tariff for 400 kV D/C Dadri-Loni Road transmission line (in short' the transmission line') for the 2014-19 tariff period for supplying power from Dadri Station to Delhi Discoms viz, Respondent BRPL, Respondent BYPL and Respondent TPDDL

3. In compliance to the directions of the Commission vide order dated 20.4.2015 in Petition No 377/TT/2014, the Petitioner revised Petition No. 324/GT/2014, by incorporating its claim for tariff of the transmission line (from 2.8.2014 to 31.3.2019) in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the Commission vide its order dated 2.5.2017 in Petition No. 324/GT/2014 approved the

capital cost and annual fixed charges of the generating station and the transmission line for the 2014-19 tariff period. Thereafter, in Petition No.190/GT/2020 filed by the Petitioner for truing-up of tariff of the generating station and transmission line for the 2014-19 tariff period, the Commission vide its order dated 21.5.2022, while truing-up the tariff of the generating station for the 2014-19 tariff period, granted liberty to the Petitioner to approach the Commission with a separate tariff petition for truing-up of tariff for the 2014-19 tariff period and for determination of tariff for 2019-24 tariff period in respect of the said transmission line, in terms of the relevant tariff regulations. The relevant portion of the order dated 21.5.2022 is extracted below:

> *"9. Though the Petitioner, vide affidavit dated 3.1.2020, has submitted the tariff filing formats for truing-up of tariff of the transmission line for the 2014-19 tariff period, it has not furnished the detailed justification for time over-run and the auditor's certificate as on COD along with details of IDC and IEDC on cash basis. In the absence of aforesaid details, it is difficult to prudently undertake the determination of capital cost as on COD of the said transmission line. In view of this, we are not inclined to revise the tariff of the said transmission line, determined by order dated 2.5.2017 in Petition No.324/GT/2014 for the 2014-19 tariff period. It is noticed that the Petitioner vide affidavit dated 24.1.2020, has also filed petition for determination of tariff of the said transmission line for the 2019-24 tariff period. Since the capital cost of the transmission line as on 31.3.2019, is not being revised by this order, for the reasons as stated above, the capital cost and transmission tariff for the 2019-24 tariff period is also not being determined. <u>The Petitioner is, however, granted liberty to approach the Commission with a separate tariff petition for revision of tariff for the 2014-19 tariff period and for determination of tariff for 2019-24 tariff period in respect of the said transmission line, in terms of the relevant tariff regulations.</u> Needless to say, since the transmission line form part of the generating station, the tariff for the same, shall be treated as part of the generation tariff, in terms of the Commission's order dated 20.4.2015 as referred to in paragraph 3 above."*

4. Accordingly, the capital cost and the annual fixed charges approved by order dated 21.5.2022 in Petition No. 190/GT/2020 in respect of the generating station (excluding the transmission line) for the 2014-19 tariff period is as under:

**Capital Cost allowed**

*(Rs. in lakh)*

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|---|
| Opening Capital Cost | 492158.64 | 495483.31 | 496730.78 | 496944.38 | 497543.90 |
| Add: Additional capital expenditure | 3324.67 | 1247.47 | 213.60 | 599.51 | (-) 723.20 |
| **Closing Capital Cost** | 495483.31 | 496730.78 | 496944.38 | 497543.90 | 496820.70 |
| Average Capital Cost | 493820.98 | 496107.05 | 496837.58 | 497244.14 | 497182.30 |

**Annual Fixed Charges allowed**

*(Rs. in lakh)*

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|---|
| Depreciation | 24964.07 | 25098.28 | 25167.18 | 25197.73 | 25190.66 |
| Interest on Loan | 23270.59 | 20628.03 | 18002.30 | 15031.37 | 12903.06 |
| Return on Equity | 29989.25 | 30273.94 | 30318.52 | 30343.33 | 30420.10 |
| Interest on Working Capital | 11470.36 | 11507.92 | 11487.92 | 11711.78 | 11746.28 |
| O&M Expenses | 15867.68 | 17101.68 | 17904.26 | 19219.39 | 20536.95 |
| **Total** | **105561.94** | **104609.85** | **102880.17** | **101503.61** | **100797.05** |

## Present Petition

5. The Petitioner in the present petition, has claimed capital cost and annual fixed charges for the generating station as under:

**Capital cost claimed**

*(Rs. in lakh)*

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Opening capital Cost | 498132.61 | 498132.61 | 499804.59 | 502304.59 | 552304.59 |
| Add: Addition during the year/period | 0.00 | 1671.98 | 2500.00 | 50000.00 | 0.00 |
| Closing Capital Cost | 498132.61 | 499804.59 | 502304.59 | 552304.59 | 552304.59 |
| **Average Capital Cost** | **498132.61** | **498968.60** | **501054.59** | **527304.59** | **552304.59** |

**Annual Fixed Charges claimed**

*(Rs. in lakh)*

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Depreciation | 25135.77 | 25177.96 | 25283.21 | 26607.79 | 14140.36 |
| Interest on Loan | 11060.00 | 8976.61 | 6774.67 | 6023.56 | 5652.87 |
| Return on Equity | 28971.89 | 28999.36 | 29067.14 | 30560.30 | 32011.62 |
| Interest on Working Capital | 9883.99 | 9907.16 | 9928.67 | 10014.83 | 9897.21 |
| O&M Expenses | 23948.90 | 24945.24 | 25992.80 | 27098.61 | 28258.77 |
| **Total** | **99000.55** | **98006.33** | **97046.50** | **100305.09** | **89960.83** |

6. The Respondent UPPCL (vide affidavit dated 11.1.2021), Respondent TPDDL (vide affidavit dated 4.6.2021) and Respondent BYPL (vide affidavit dated 4.6.2021)

have filed their replies and the Petitioner has filed its rejoinder affidavit to the reply of the Respondent UPPCL on 27.5.2021. The Petitioner has also filed additional information (Ash transportation charges and information based on ROP in similar matters) vide affidavits dated 27.5.2021 and 4.6.2021 respectively. This Petition was heard along with Petition No. 190/GT/2020 (truing-up of tariff of generating station for the period 2014-19), through virtual conferencing, on 11.6.2021 and the Commission, after permitting the Respondents to file their respective pleadings, reserved its order in the matter. The Respondent BRPL and Respondent BYPL have filed their replies vide separate affidavits dated 9.7.2021. The Petitioner has filed its rejoinders to the replies of the Respondents on 19.7.2021. Based on the submissions of the parties and the documents available on record, we proceed for approval of tariff of the generating station for the 2019-24 tariff period, in this petition, on prudence check, as stated in the subsequent paragraphs.

**Capital Cost**

7. 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. Regulation 19 of the 2019 Tariff Regulations provides as follows:

> ***"19. Capital Cost:*** *(1) The Capital cost of the generating station or the transmission system, as the case may be, as determined by the Commission after prudence check in accordance with these regulations shall form the basis for determination of tariff for existing and new projects.*
>
> *(2) The Capital Cost of a new project shall include the following:*
>
> *(a) The expenditure incurred or projected to be incurred up to the date of commercial operation of the project;*
> *(b) Interest during construction and financing charges, on the loans (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed;*
> *(c) Any gain or loss on account of foreign exchange risk variation pertaining to the loan*

*amount availed during the construction period;*
*(d) Interest during construction and incidental expenditure during construction as computed in accordance with these regulations;*
*(e) Capitalised initial spares subject to the ceiling rates in accordance with these regulations;*
*(f) Expenditure on account of additional capitalization and de-capitalisation determined in accordance with these regulations;*
*(g) Adjustment of revenue due to sale of infirm power in excess of fuel cost prior to the date of commercial operation as specified under Regulation 7 of these regulations;*
*(h) Adjustment of revenue earned by the transmission licensee by using the assets before the date of commercial operation;*
*(i) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
*(j) Capital expenditure incurred towards railway infrastructure and its augmentation for transportation of coal upto the receiving end of the generating station but does not include the transportation cost and any other appurtenant cost paid to the railway;*
*(k) Capital expenditure on account of biomass handling equipment and facilities, for co-firing;*
*(l) Capital expenditure on account of emission control system necessary to meet the revised emission standards and sewage treatment plant;*
*(m) Expenditure on account of fulfilment of any conditions for obtaining environment clearance for the project;*
*(n) Expenditure on account of change in law and force majeure events; and*
*(o) 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.*

*(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 modernisation 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.*

*(4) The capital cost in case of existing or new hydro generating station shall also include:*
*(a) cost of approved rehabilitation and resettlement (R&R) plan of the project in conformity with National R&R Policy and R&R package as approved; and*
*(b) cost of the developer's 10% contribution towards Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) and Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) project in the affected area.*

*(5) The following shall be excluded from the capital cost of the existing and new projects:*
*(a) The assets forming part of the project, but not in use, as declared in the tariff petition;*
*(b) De-capitalised Assets after the date of commercial operation on account of replacement or removal on account of obsolescence or shifting from one project to another project:*

*Provided that in case replacement of transmission asset is recommended by Regional Power Committee, such asset shall be de-capitalised only after its redeployment;*

*Provided further that unless shifting of an asset from one project to another is of permanent nature, there shall be no de-capitalization of the concerned assets.*

*(c) In case of hydro generating stations, any expenditure incurred or committed to be incurred by a project developer for getting the project site allotted by the State Government by following a transparent process;*
*(d) Proportionate cost of land of the existing project which is being used for generating power from generating station based on renewable energy; and*
*(e) Any grant received from the Central or State Government or any statutory body or authority for the execution of the project which does not carry any liability of repayment."*

8. The annual fixed charges claimed by the Petitioner is based on the opening capital cost of Rs.498132.61 lakh, as against the capital cost of Rs.496820.70 lakh, on cash basis (after removal of un-discharged liabilities amounting to Rs.6742.78 lakh) as on 31.3.2019, as allowed vide order dated 21.5.2022 in Petition No. 190/GT/2020. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations, the capital cost of Rs.496820.70 lakh on cash basis has been considered as on 1.4.2019.

**Additional Capital Expenditure**

9. Clauses (1) and (2) of Regulations 25 and Regulation 26 of the 2019 Tariff Regulations, provides as under:

*"25. Additional Capitalisation 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 Capitalisation 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 Modernisation (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-capitalisation 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-capitalisation 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-capitalisation takes place with corresponding adjustments in cumulative depreciation and cumulative repayment of loan, duly taking into consideration the year in which it was capitalised.*

10. The year-wise projected additional capital expenditure claimed by the Petitioner in terms of the 2019 Tarif Regulations, are as follows:

***(Rs. in lakh)***

| Sl. No | Head of Work/ Equipment | Regulation | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|---|---|
| **A** | **Works under Original scope, Change in Law etc. eligible for RoE at normal rate** | | | | | | |
| 1 | Sewer water usage System with Noida Authority | 26(1)(b) and 26(1)(f) | 0.00 | 0.00 | 0.00 | 50000.00 | 0.00 |
| | **Sub Total-A** | | **0.00** | **0.00** | **0.00** | **50000.00** | **0.00** |
| **B** | **Works beyond Original scope excluding add-cap due to Change in law eligible for RoE at weighted average rate of interest** | | | | | | |
| 2 | Integrated Security system along with Plant area modification and gate modification | 26(1)(d) | 0.00 | 0.00 | 2500.00 | 0.00 | 0.00 |
| 3 | HMI Upgradation of Main Plant and Offsites | 25(2)(c) | 0.00 | 1671.98 | 0.00 | 0.00 | 0.00 |
| | **Sub Total-B** | | **0.00** | **1671.98** | **2500.00** | **0.00** | **0.00** |
| | **Total Additional Capital expenditure claimed** | | **0.00** | **1671.98** | **2500.00** | **50000.00** | **0.00** |

***(a) Sewer water usage system with Noida Authority***

11. The Petitioner has claimed total projected additional capital expenditure of Rs.50000.00 lakh during the period 2022-23 towards Sewer water usage system with Noida Authority under Regulation 26(1)(b) read with Regulation 26(1)(f) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that Ministry of Power (MoP), GOI has mandated the use of treated sewage water by the thermal generating station(s) including the existing plants located within 50 km radius of Sewage Treatment Plant (STP) of Municipality/local bodies/similar organization. The Petitioner has further submitted that as the generating station is located in Gautam Budh Nagar district of Uttar Pradesh which falls in the vicinity (within 50 km radius) of NOIDA Authority, the generating station, under new policy guidelines is

mandated to procure Secondary treated sewage water of NOIDA Authority, for non-potable use in plant. In view of this, the Petitioner has entered into an agreement with NOIDA authority for supply of Secondary treated sewage water for the generating station. It has submitted that as per mutual agreement between Noida Authority and the Petitioner, the generating station will be procuring Secondary treated sewage water from STP of NOIDA Authority at "Point of Delivery" i.e. STP facility and pumping arrangement within NOIDA STP premises which falls under NOIDA ownership. The sewage treated water will be transported through Sewage Water Cross Country Transmission Pipeline (SWCCTP) to the generating station premises and treated via Tertiary Treatment Plant (TTP) and the Petitioner would incur capital expenditure towards SWCCTP and TTP and the same will be assets owned by the generating station. The Petitioner has submitted that since the use of treated sewage water of nearby Municipality/local authority by the generating station has been mandated under new law, the Commission may allow the claim under Regulation 26(1)(b) read with Regulation 26(1)(f) of the 2019 Tariff Regulations.

12. The Respondent, BRPL has submitted that the Petitioner has not placed on record the relevant notification of the MoP, GOI based on which the additional expenditure has been claimed under Regulation 26(1)(b) of the 2019 Tariff Regulations. It has also submitted that the capital cost will be borne by the Petitioner's company as the assets will be vested in the Petitioner's company. The Respondent has stated that the proposal does not provide any details and the benefits which will be accrued to Petitioner or its beneficiaries in the form of water charges. The Respondent has further submitted that the 2019 Tariff Regulations do not provide for additional capitalization on accrual basis and the same may be rejected. In response, the Petitioner, has clarified that it has enclosed copy of the Tariff Policy dated

28.1.2016, which require the use of treated sewage water by thermal power plants existing within the 50 km radius of the sewage treatment plant of the municipality. The Petitioner has also submitted that the in-principle approval sought for the use of treated sewage water in some of its generating stations was not granted due to absence of a provision under the 2014 Tariff Regulations. However, the Commission vide its order dated 6.1.2020 in Petition No. 178/GT/2017 (NTPC v MPPMCL & ors) had granted liberty to the Petitioner to claim such additional capital expenditure. The Petitioner has stated that pursuant to this, a specific provision was made under the 2019 Tariff Regulations and therefore the claim for additional capital expenditure may be allowed under Regulation 26(1)(f) of the 2019 Tariff Regulations.

13. The matter has been considered. It is observed that the clause 6.2(5) of the National Tariff Policy, as notified by MoP, GOI on 28.1.2016 mandates the use of treated sewage water by such generating stations, existing within the 50 km radius of the sewage treatment plant of the municipality. The relevant extract from the policy provides as follows:

> *"(5) The thermal power plant(s) including the existing plants located within 50 km radius of sewage treatment plant of Municipality/local bodies/similar organization shall in the order of their closeness to the sewage treatment plant, mandatorily use treated sewage water produced by these bodies and the associated cost on this account be allowed as a pass through in the tariff. Such thermal plants may also ensure back-up source of water to meet their requirement in the event of shortage of supply by the sewage treatment plant. The associated cost on this account shall be factored into the fixed cost so as not to disturb the merit order of such thermal plant. The shutdown of the sewage treatment plant will be taken in consultation with the developer of the power plant."*

14. The Regulation 26(1)(f) of the 2019 Tariff Regulations provides for approval of additional capital expenditure incurred towards usage of water from sewage treatment plant in thermal generating station. In this background, the claim of the Petitioner is

allowed on projection basis under Regulation 26(1)(f) of the 2019 Tariff Regulations. However, the Petitioner is directed to furnish all relevant details, viz., the agreements entered into by the Petitioner, the Board approval of the scheme along with the costs involved and the details of volume/cost of water consumed after utilizing the proposed system etc., at the time of truing-up of tariff.

***(b) Integrated Security System along with plant area modification and Gate modification***

15. The Petitioner has claimed total projected additional capital expenditure of Rs.2500.00 lakh during 2021-22 towards Integrated Security System along with Plant area modification and Gate modification under Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification of the claim, the Petitioner has submitted that in view of the prevailing security situation in the region, MOP, GoI, vide letter dated 23.10.2019 has directed the Petitioner for strengthening of the security of vital installations and critical infrastructure. The Petitioner has further submitted that the salient features of Integrated Security System proposed for the generating stations are as follows:

a. CCTV cameras at perimeter, watch towers and other static locations;
b. PIDS (Perimeter Intrusion Detection System) for perimeter intrusion alerts;
c. Access Control system with pre-built zones, entry & exit through smart cards, biometric access for critical areas.
d. Physical security equipment like turnstiles, boom barrier, bollards, RFID tag-based Vehicle entry;
e. Automatic number plate recognition system (ANPR) and Under Vehicle scanning system (UVSS) for scanning the vehicles for any explosives.
f. Security Operation Centre (SOC) with command & control centre with 2D location maps
g. GPS enabling of QRT vehicles & fire vehicles.
h. Thermal cameras for long distance night-time monitoring
i. Material movement of high value items through RFID tags

16. The Petitioner has submitted that as per specifications approved by CISF Authorities, the expenditure for implementation of "Integrated Security System" for

enhanced security of the generating station is incurred and therefore the same may be allowed under Regulation 26(1)(d) of the 2019 Tariff Regulations.

17. The Respondents BRPL and Respondent BYPL have submitted that the letter referred by the Petitioner do not envisage any additional capitalization, but only informs the generating stations about the immediate threat perception received by MoP, GOI from Intelligence Agencies. They have also submitted that the Petitioner has not furnished any details/documents to justify the need for incurring the additional expenditure on this count. In response, the Petitioner has clarified that the directions of MOP, GoI contained in letter dated 23.10.2019 amounts to 'change in law' and once there is a direction from MoP, GOI to the Petitioner to look into the security threats, obvious steps would have to be taken by the Petitioner for enhancement of the security. The Petitioner has also submitted that the 'integrated security system' proposed by the security agency i.e. CISF, is to be installed by the Petitioner only to take care of such exigencies. The Petitioner has further submitted that the Commission has allowed the projected cost incurred as per the recommendations of CISF for the safety and security of stations in catena of its orders including the order dated 12.4.2017 in Petition No. 288/GT/2014, which is as under:

> *"CCTV System*
> *59. The petitioner has claimed projected additional capital expenditure of Rs.8.01 lakh (Rs.4.15 lakh in 2015-16, Rs.93 lakh in 2017-18 and Rs.1.93 lakh in 2018-19) towards Installation of 12 number of CCTV system under Regulation 14(3)(iii) read with Regulation 15 of the 2014 Tariff Regulations. The petitioner has submitted that Installation of CCTV system is essential for ensuring the safety of the plants, machinery and personnel of the generating station. It has also submitted that the asset is required from the internal security point of view due to increased threat perception, especially for the power generating stations. The petitioner has also claimed projected additional capital expenditure Rs.64.00 lakh (Rs.32.00 lakh in 2017-18 and Rs.32.00 lakh in 2018-19) towards Installation of additional 20 number of CCTV system at different locations in Plant and Township area under Regulation 14(3)(iii) read with Regulation 15 of the 2014 Tariff Regulations. The petitioner has furnished the copy of recommendations and further stated that as per the recommendations of Joint Inspection Report of CISF & HR. for Security Surveillance inside Plant Area (Watch*

*Tower-10, Scrap Yard Area, Railway in Gate, WTP & Canal Area & Ash Silo) and Township Areas CCTV is required.*
*60. We have examined the matter. Considering the fact that the expenditure of Rs.8.01 lakh and Rs.64.00 lakh for CCTV system is incurred for the safety and security of the generating station and based on the requirement of Security agency, we are inclined to allow the same in terms of Regulation 14(3)(iii) of the 2014 Tariff Regulations."*

18. Accordingly, the Petitioner has prayed that the Commission may allow the projected additional capitalisation under Regulation 26(1)(d) of the 2019 Tariff Regulations.

19. The matter has been considered. The Petitioner has furnished copy of letter dated 23.10.2019 from MoP, GoI wherein, the Petitioner has been directed for an urgent review and strengthening of cyber/computer security and physical security of vital installations and the critical infrastructure. In our view, since the projected additional capital expenditure claimed is necessary for higher security and safety of the generating station as directed by MoP, GoI, we are inclined to allow the claim of the Petitioner under Regulation 26(1)(d) of the 2019 Tariff Regulations. However, the Petitioner is directed to provide breakup of the actual expenditure incurred towards the said additional capital expenditure at the time of truing up of tariff.

***(c) HMI Upgradation of NCTPS Dadri Stage-II Main Plant and Offsites***

20. The Petitioner has claimed total projected additional capital expenditure of Rs.1671.98 lakh in 2020-21 for HMI Upgradation of Main Plant and Offsites under Regulation 25(2)(c) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that M/s BHEL (OEM) had supplied Windows XP based MaxDna HMI system to the generating station. It has also submitted that Microsoft has ended support for Windows XP on 8.4.2014 and as of now, the Windows XP based workstations are no longer available in market. The Petitioner has stated that the HMI software installed in the generating station is not compatible with currently available

workstations (Windows 10 based) and due to obsolescence of windows XP operating system, no security updates for operating system are available from Microsoft making DDCMIS system vulnerable to malware, viruses and hacking. Accordingly, the Petitioner has submitted that HMI upgradation is to be carried out in the generating station, where the operating stations and HMIPIS application software has reached the end of life and support has been stopped by the OEM. It has also stated that these workstations are very critical for plant operation as without them it will not be possible to run the generating station. Considering the importance of these HMI systems, the Petitioner has submitted that it has become necessary to upgrade the entire system to latest available hardware and software and therefore, the additional capital expenditure claimed may be allowed under Regulation 25(2)(c) of the 2019 Tariff Regulations.

21. The Respondent, BRPL and Respondent BYPL have submitted that the Petitioner has not submitted any details nor any documentary evidence for carrying out prudence check. In response, the Petitioner has clarified that the projected additional capital expenditure is incurred due to obsolesce of an existing software operating system. It has further submitted that it has furnished the letter of M/s BHEL clearly stating that Windows XP-based workstations are no longer available and the HMI software installed in the generating station is not compatible with currently available workstations (Windows 10 based).

22. The matter has been considered. It is observed that the Petitioner in its response to the replies of the Respondents, BRPL and BYPL has already submitted letter of BHEL along with the petition, but no letter/documentary evidence has been furnished in support of the claim towards the said projected additional capital

expenditure. Therefore, in the absence of the documentary evidence, the projected additional capital expenditure claimed by the Petitioner is not allowed. However, the Petitioner is directed to submit relevant documents for its claim along with gross value of old asset de-capitalized/upgraded or not in use against which new item is claimed, at the time of truing up.

23. Based on the above, the total projected additional capital expenditure claimed by the Petitioner and those allowed for the 2019-24 tariff period is summarized as under:

***(Rs. in lakh)***

| | | **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** | **Total** |
|---|---|---|---|---|---|---|---|
| **Additional Capital Expenditure beyond original scope of work** | | | | | | | |
| Sewer water usage System with Noida Authority | Claimed | 0.00 | 0.00 | 0.00 | 50000.00 | 0.00 | 50000.00 |
| | Approved | 0.00 | 0.00 | 0.00 | 50000.00 | 0.00 | 50000.00 |
| Integrated Security System along with plant area modification and Gate modification | Claimed | 0.00 | 0.00 | 2500.00 | 0.00 | 0.00 | 2500.00 |
| | Approved | 0.00 | 0.00 | 2500.00 | 0.00 | 0.00 | 2500.00 |
| HMI Upgradation of NCPS Dadri Stage-II Main Plant and Offsites | Claimed | 0.00 | 1671.98 | 0.00 | 0.00 | 0.00 | 1671.98 |
| | Approved | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total Additional Capital Expenditure** | **Claimed** | **0.00** | **1671.98** | **2500.00** | **50000.00** | **0.00** | **54171.98** |
| | **Approved** | **0.00** | **0.00** | **2500.00** | **50000.00** | **0.00** | **52500.00** |

**<u>Additional Capital Expenditure eligible for ROE at Weighted Average Rate of Interest (WAROI)</u>**

***(Rs. in lakh)***

| **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|
| 0.00 | 0.00 | 2500.00 | 50000.00 | 0.00 |

## Capital cost allowed for the 2019-24 tariff period

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

***(Rs. in lakh)***

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Opening Capital Cost (A) | 496820.70 | 496820.70 | 496820.70 | 499320.70 | 549320.70 |
| Projected additional capital expenditure (B) | 0.00 | 0.00 | 2500.00 | 50000.00 | 0.00 |
| **Closing Capital Cost (C) = (A+B)** | **496820.70** | **496820.70** | **499320.70** | **549320.70** | **549320.70** |
| Average Capital Cost (D) = [(A+C)/2] | 496820.70 | 496820.70 | 498070.70 | 524320.70 | 549320.70 |

## Debt-Equity Ratio

25. Regulation 18 of the 2019 Tariff Regulations provides as follows:

*"18. Debt-Equity Ratio: (1) For 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 a 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 modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this Regulation."*

26. The Commission vide its order dated 21.5.2022 in Petition No. 190/GT/2020 has considered gross normative loan and equity of Rs.347774.49 lakh and Rs.149046.21 lakh, respectively as on 31.3.2019, and the same has been retained as gross normative loan and equity as on 1.4.2019 for the purpose of tariff. Further, the projected additional capital expenditure approved above has been allocated to debt and equity in the ratio of 70:30. Accordingly, the debt-equity ratio is worked out as under:

| | **As on 1.4.2019** | | **Additional capital expenditure during the period 2019-24** | | **As on 31.3.2024** | |
|---|---|---|---|---|---|---|
| | **Amount (Rs. in lakh)** | **(%)** | **Amount (Rs. in lakh)** | **(%)** | **Amount (Rs. in lakh)** | **(%)** |
| Debt (A) | 347774.49 | 70.00 | 36750.00 | 70.00 | 384524.49 | 70.00 |
| Equity (B) | 149046.21 | 30.00 | 15750.00 | 30.00 | 164796.21 | 30.00 |
| **Total (C) = (A)+(B)** | **496820.70** | **100.00** | **52500.00** | **100.00** | **549320.70** | **100.00** |

## Return on Equity

27. Regulation 30 and Regulation 31 of the 2019 Tariff Regulations provide as follows:

*"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 station, 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 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:*

*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;*

*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;*

*in case of a thermal generating station, with effect from 1.4.2020: rate of return on equity shall be reduced by 0.25% in case of failure to achieve the ramp rate of 1% per minute; 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. 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.*

*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 a generating company or a 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 a transmission licensee paying normal corporate tax including surcharge and cess:*

*Estimated Gross Income from generation or transmission business for FY 2019-20 is Rs 1,000 crore;*
*Estimated Advance Tax for the year on above is Rs 240 crore;*
*Effective Tax Rate for the year 2019-20 = Rs 240 Crore/Rs 1000 Crore = 24%;*
*Rate of return on equity = 15.50/ (1-0.24) = 20.395%.*

*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 customers, as the case may be, on year to year basis."*

28. The Petitioner has claimed Return on Equity (ROE) considering base rate of 16.00%, including additional ROE of 0.50% allowed vide order dated 23.8.2016 in Petition No. 300/GT/2014 towards completion of the generating station within the time limit specified in Appendix-II of the 2009 Tariff Regulations, and effective tax rate of 17.472% for the opening equity as on 1.4.2019 and projected additional capital expenditure claimed under original scope of work, change in law etc. for the 2019-24 tariff period.

29. We have considered the submission of the Petitioner. There is no provision for allowing additional ROE of 0.50% in 2019 Tariff Regulations. Therefore, Petitioner's claim for additional ROE of 0.50% is not allowed. Further, for additional capital expenditure claimed beyond original scope of work (excluding additional capital expenditure due to change in law) the Petitioner has claimed ROE after grossing up WAROI of 8.9271% in 2019-20, 9.0380% in 2020-21, 8.9671% in 2021-22, 8.8608%

in 2022-23 and 8.6826% in 2023-24 with effective tax rate of 17.472%. The same has been considered, without grossing up of WAROI for the purpose of tariff. Accordingly, ROE has been worked out as under:

***(a) Return on Equity at Normal Rate***

***(Rs. in lakh)***

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Normative Equity-Opening (A) | 149046.21 | 149046.21 | 149046.21 | 149046.21 | 149046.21 |
| Addition of Equity due to additional capital expenditure (B) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Normative Equity-Closing (C)= (A) + (B) | 149046.21 | 149046.21 | 149046.21 | 149046.21 | 149046.21 |
| Average Normative Equity (D) = [(A+C)/2] | 149046.21 | 149046.21 | 149046.21 | 149046.21 | 149046.21 |
| Return on Equity (Base Rate) (E) | 15.500% | 15.500% | 15.500% | 15.500% | 15.500% |
| 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) - annualised (H) = [(D)x(G)]** | **27993.86** | **27993.86** | **27993.86** | **27993.86** | **27993.86** |

***(b) Return on Equity at WAROI Rate***

***(Rs. in lakh)***

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Normative Equity – Opening (A) | 0.00 | 0.00 | 0.00 | 750.00 | 15750.00 |
| Addition of Equity due to additional capital expenditure (B) | 0.00 | 0.00 | 750.00 | 15000.00 | 0.00 |
| Normative Equity-Closing (C) = (A) + (B) | 0.00 | 0.00 | 750.00 | 15750.00 | 15750.00 |
| Average Normative Equity (D) = [(A+C)/2] | 0.00 | 0.00 | 375.00 | 8250.00 | 15750.00 |
| Weighted average rate of interest (E) | 8.9270% | 9.0380% | 8.9670% | 8.8610% | 8.6830% |
| **Return on Equity (Pre - tax) – annualized (E) = (D) x (E)** | **0.00** | **0.00** | **33.63** | **731.03** | **1367.57** |

**Total Return on Equity allowed**

***(Rs. in lakh)***

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Return on Equity at Normal Rate (A) | 27993.86 | 27993.86 | 27993.86 | 27993.86 | 27993.86 |
| Return on Equity at WAROI (B) | 0.00 | 0.00 | 33.63 | 731.03 | 1367.57 |
| Total Return on Equity allowed (A+B) | 27993.86 | 27993.86 | 28027.49 | 28724.89 | 29361.43 |

**<u>Interest on Loan</u>**

30. Regulation 32 of the 2019 Tariff Regulations provides as follows:

> *"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-capitalisation 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 loans shall be reflected from the date of such re-financing."*

31. Interest on loan has been computed as under:

(i) The gross normative loan amounting to Rs.347774.49 lakh as on 31.3.2019 as considered in order dated 21.5.2022 in Petition No. 190/GT/2020 has been retained as on 1.4.2019;

(ii) Cumulative repayment amounting to Rs.213253.69 lakh as on 31.3.2019 as considered in order dated 21.5.2022 in Petition No. 190/GT/2020 has been retained as on 1.4.2019;

(iii) Accordingly, the net normative opening loan as on 1.4.2019 works out to be Rs.134520.80 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 years of the 2019-24 tariff period.

(vi) The Petitioner has claimed interest on loan by considering WAROI of 8.9271%, 9.0380%, 8.9671%, 8.8608% and 8.6826% for the years 2019-20, 2020-21, 2021-22, 2022-23 and 2023-24, respectively, the same has been considered subject to truing up.

32. Necessary calculation of Interest on loan is as under:

***(Rs. in lakh)***

| | **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|---|
| Gross opening loan (A) | 347774.49 | 347774.49 | 347774.49 | 349524.49 | 384524.49 |
| Cumulative repayment of loan upto previous year (B) | 213253.69 | 238323.07 | 263392.45 | 288524.91 | 314981.93 |
| Net Loan Opening (C) = (A) - (B) | 134520.80 | 109451.42 | 84382.04 | 60999.59 | 69542.57 |
| Addition due to additional capital expenditure (D) | 0.00 | 0.00 | 1750.00 | 35000.00 | 0.00 |
| Repayment of Loan during the period (E) | 25069.38 | 25069.38 | 25132.46 | 26457.02 | 14235.54 |
| Net Loan Closing (F) =(C) +(D) - (E) | 109451.42 | 84382.04 | 60999.59 | 69542.57 | 55307.02 |
| Average Loan (G)= [(C+F)/2] | 121986.11 | 96916.73 | 72690.81 | 65271.08 | 62424.79 |
| Weighted Average Rate of Interest of loan (H) | 8.9271% | 9.0380% | 8.9671% | 8.8608% | 8.6826% |
| **Interest on Loan (I) = (G) x (H)** | **10889.82** | **8759.33** | **6518.26** | **5783.54** | **5420.10** |

## Depreciation

33. Regulation 33 of the 2019 Tariff Regulations provides as follows:

*"33. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system or element thereof including communication system. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication*

*system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units:*

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

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

*(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:*

*Provided that the salvage value for IT equipment and software shall be considered as NIL and 100% value of the assets shall be considered depreciable;*

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

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

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

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

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

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

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

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

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

*(9) Where the emission control system is implemented within the original scope of the generating station and the date of commercial operation of the generating station or unit*

*thereof and the date of operation of the emission control system are the same, depreciation of the generating station or unit thereof including the emission control system shall be computed in accordance with Clauses (1) to (8) of this Regulation.*
*(10) Depreciation of the emission control system of an existing or a new generating station or unit thereof where the date of operation of the emission control system is subsequent to the date of commercial operation of the generating station or unit thereof, shall be computed annually from the date of operation of such emission control system based on straight line method, with salvage value of 10%, over a period of-*

*a) twenty five years, in case the generating station or unit thereof is in operation for fifteen years or less as on the date of operation of the emission control system; or*
*b) balance useful life of the generating station or unit thereof plus fifteen years, in case the generating station or unit thereof is in operation for more than fifteen years as on the date of operation of the emission control system; or*
*c) ten years or a period mutually agreed by the generating company and the beneficiaries, whichever is higher, in case the generating station or unit thereof has completed its useful life."*

34. Accordingly, cumulative depreciation amounting to Rs.213540.04 lakh as on 31.3.2019 as considered in order dated 21.5.2022 in Petition No. 190/GT/2020 has been considered for the purpose of tariff. The balance depreciable value before providing depreciation for the year 2019-20 works out to Rs.226451.52 lakh. Since, as on 1.4.2019, the used life of the generating station is 8.92 years, which is less than 12 years from the effective station COD of 1.5.2010, the depreciation for the period 2019-23 has been calculated by applying weighted average rate of depreciation (WAROD) as claimed by the Petitioner, subject to truing up. The WAROD computation is attached as Annexure-I. Further, since the used life of the generating station as on 1.4.2023 i.e. 12.92 years is in excess of 12 years, the deprecation for the year 2023-24 has been calculated based on spreading over of the remaining depreciable value over the balance useful life of the generating station. Necessary calculation of depreciation is as under:

***(Rs. in lakh)***

| | **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|---|
| Average Capital Cost (A) | 496820.70 | 496820.70 | 498070.70 | 524320.70 | 549320.70 |
| Value of freehold land included in average capital cost (B) | 7941.18 | 7941.18 | 7941.18 | 7941.18 | 7941.18 |
| Value of software and IT equipment included in | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| average capital cost (C)* | | | | | |
| Depreciable Value (D)= [(A-B-C)x 90%+ (C)] | 439991.57 | 439991.57 | 441116.57 | 464741.57 | 487241.57 |
| Remaining depreciable value at the beginning of the year (E) = [(D) – (Cumulative depreciation shown at (J) at the end of the preceding period)] | 226451.52 | 201382.14 | 177437.76 | 175930.31 | 171973.28 |
| No. of completed years at the beginning of the year (F) | 8.92 | 9.92 | 10.92 | 11.92 | 12.92 |
| Balance useful life at the beginning of the year (G) = [25 - (F)] | 16.08 | 15.08 | 14.08 | 13.08 | 12.08 |
| Weighted Average Rate of Depreciation (WAROD) (H) | 5.0460% | 5.0460% | 5.0460% | 5.0460% | # |
| Depreciation during the year (I) = [(A) x (H)] for the period 2019-23 and [E/(G)] for the year 2023-24 | 25069.38 | 25069.38 | 25132.46 | 26457.02 | 14235.54 |
| Cumulative depreciation at the end of the year (J) = [(I) + (Cumulative Depreciation (shown at J) at the end of the previous year)]** | 238609.42 | 263678.81 | 288811.26 | 315268.28 | 329503.83 |

** As per the Petitioner submissions, the details of IT Equipment will be provided at the time of truing* up.
***The cumulative depreciation at the end of 2018-19 is Rs.213540.04 lakh*.
*# Not applicable.*

## O&M Expenses

35. Regulation 35(1)(1) of the 2019 Tariff Regulations provides as follows:

*"(35)(1) Thermal Generating Station: Normative Operation and Maintenance expenses of thermal generating stations shall be as follows:*

*(1) 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 and above Series |
|---|---|---|---|---|---|
| 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 |

| Year | 200/210/ 250 MW Series | 300/ 330/ 350 MW Series | 500 MW Series | 600 MW Series | 800 MW and above Series |
|---|---|---|---|---|---|
| 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.*

36. The Petitioner has claimed normative O&M expenses in Form-3A as under:

***(Rs. in lakh)***

| 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|
| 22059.80 | 22834.00 | 23637.60 | 24470.60 | 25323.20 |

37. As stated earlier, the generating station, with a capacity of 980 MW comprises of two unit of 490 MW each, with the effective date of commercial operation as 1.5.2010. Therefore, in terms of Regulation 35(1) of the 2019 Tariff Regulations, the O&M expenses as claimed by the Petitioner above, has been allowed for the 2019-24 tariff period.

## Water Charges

38. 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."*

39. The actual water charges claimed by the Petitioner and allowed by order dated 21.5.2022 in Petition No. 190/GT/2020 for the 2014-19 tariff period is as follows:

***(in Rs. lakh/MW)***

| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|
| 187.68 | 178.49 | 164.89 | 171.93 | 152.92 |

40. In terms of the first proviso to Regulations 35(1)(6) of the 2019 Tariff Regulations, water charges shall be allowed separately, based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details furnished by the Petitioner in respect of water charges as applicable for 2018-19 are as under:

| Description | Remarks |
|---|---|
| Type of Plant | Coal Based |
| Type of cooling water system | Closed Cycle |
| Consumption of Water | 485374 (1000 cft) |
| Rate of Water charges (Including Royalty) | Rs.32.03/1000 cft |
| Total Water Charges | Rs.155.48 Lakh |

41. The Petitioner has claimed water charges of Rs.155.48 lakh in 2019-20, Rs.158.70 lakh in 2020-21, Rs.161.92 lakh in 2021-22, Rs.165.14 lakh in 2022-23 and Rs.168.36 lakh in 2023-24.

42. The Respondent, TPDDL has submitted that as per actual water expenses claimed by the Petitioner for the 2014-19 tariff period there has been a declining trend in water expenses with an average of (-) 5% per annum. The Respondent has further requested that in absence of the appropriate / necessary details, water charges claimed by the Petitioner may be rejected. In response, the Petitioner has clarified that water charges claimed is as per Regulation 35(1)(6) of the 2019 Tariff Regulations with nominal escalation to the expenditure incurred in 2018-19. The Petitioner has further clarified that the water charges incurred for the generating station works out to be Rs.108.57 lakh for 2019-20 and Rs 92.48 lakh for 2020-21 respectively.

43. The matter has been considered. The actual water consumption for 2019-20 and 2020-21 as submitted by the Petitioner has been considered and actual water charges for the period 2020-21 has been allowed for the years 2021-22, 2022-23 and 2023-24 respectively. However, the Petitioner shall, at the time of truing up of tariff, furnish the details of the actual water consumption (in cubic meters), rate (Rs/ Cubic meter) etc., separately. The water charges allowed are subject to the truing up, as per actual water charges paid, after prudence check. The water charges allowed for the 2019-24 tariff period are summarized as follows:

***(in Rs. lakh/MW)***

| **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|
| 108.57 | 92.48 | 92.48 | 92.48 | 92.48 |

**Security Charges**

44. 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"*

45. The Petitioner has claimed total security expenses of Rs.11109.52 lakh (i.e. Rs.1733.62 lakh in 2019-20, Rs.1952.54 lakh in 2020-21, Rs.2193.28 lakh in 2021-22, Rs.2462.87 lakh in 2022-23, Rs.2767.21 lakh in 2023-24) for the 2019-24 tariff period, in terms of the second proviso to Regulation 35(1)(6) of the 2019Tariff Regulations. It has, however, not furnished any justification and the assessment of security, for the expenses claimed. It is observed that the Petitioner vide affidavit dated 4.6.2021, has submitted that the actual security expenses for the generating station for 2018-19 was Rs.1395.26 lakh. Considering the fact that security expenses for thermal generating

stations for the 2019-24 tariff period, is required to be allowed separately, after prudence check, based on the assessment of the security requirement and estimated expenses to be furnished by the Petitioner, we provisionally allow the security expenses for the 2019-24 tariff period with 5% escalation per year, on the actual expenses incurred for 2018-19 (i.e. Rs.1395.26 lakh).The Petitioner shall, at the time of truing up, furnish the actual security expenses incurred along with proper justification and assessment in terms of Regulation 35(1)(6)of the 2019 Tariff Regulations. Accordingly, the security expenses as claimed by the Petitioner and allowed are summarised below:

***(Rs. in lakh)***

| **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|
| 1465.02 | 1538.27 | 1615.19 | 1695.95 | 1780.74 |

**<u>Capital spares</u>**

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

47. Accordingly, the total O&M expenses, including Water charges and Security expenses, claimed and allowed for the 2019-24 tariff period is summarized below:

***(Rs. in lakh)***

| | | **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|---|---|
| Normative O&M Expenses under Regulation 35(1)(1) of the 2019 Tariff Regulations (A) | Claimed | 22059.80 | 22834.00 | 23637.60 | 24470.60 | 25323.20 |
| | Allowed | 22059.80 | 22834.00 | 23637.60 | 24470.60 | 25323.20 |
| Water Charges (B) | Claimed | 155.48 | 158.70 | 161.92 | 165.14 | 168.36 |
| | Allowed | 108.57 | 92.48 | 92.48 | 92.48 | 92.48 |
| Security Expenses (C) | Claimed | 1733.62 | 1952.54 | 2193.28 | 2462.87 | 2767.21 |

| | | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|---|
| | Allowed | 1465.02 | 1538.27 | 1615.19 | 1695.95 | 1780.74 |
| **Total O&M expenses as allowed (including Water Charges and Security Expenses (D) = (A+B+C)** | Claimed | **23948.90** | **24945.24** | **25992.80** | **27098.61** | **28258.77** |
| | Allowed | **23633.39** | **24464.75** | **25345.27** | **26259.03** | **27196.42** |

**Fly Ash Transportation charges**

48. The Petitioner has submitted that fly ash transportation charges are recurring in nature. The Petitioner has submitted that the expenditure, which is due for recovery from the beneficiary, if gets accumulated shall attract carrying cost, if recovery is allowed at the time of truing up. Therefore, in order to avoid the interest payment/carrying cost liability of the beneficiaries, the Petitioner has prayed to recover/ pass on the ash transportation charges after adjusting the revenue earned from sale of ash subject to true-up at the end of the period. It is, however, noticed that the Petitioner has filed Petition No. 205/MP/2021 with regard to reimbursement of fly ash transportation charges in respect of its generating stations and has raised issues with regard to the higher liability of the Respondents therein on account of interest burden and cash flow issues faced by the Petitioner. Some of the Respondents therein (including UPPCL) have raised issues on 'maintainability' of Petition No. 205/MP/2021 and the Commission, after hearing the parties on 12.10.2021, has issued notices for hearing on maintainability of that petition. Therefore, the reimbursement of fly ash transportation charges will be governed by decision of the Commission in Petition No. 205/MP/2021.

**Additional Expenditure on Emission Control System**

49. The Petitioner, in terms of the Ministry of Environment and Forests and Climate Change (MOEF&CC) notification dated 7.12.2015 has submitted that it is in the process of installing the Emission Control Systems (ECS) for this generating station. It

is however noticed that the Petitioner had filed Petition No. 467/MP/2019, for approval of additional expenditure on installation of various Emission Control Systems at this generating station, in compliance of MOEF&CC notification dated 7.12.2015 and the Commission by a common order dated 30.9.2021 had disposed of the said petition, with certain observations. Therefore, we are not deciding this issue in this petition. The claim of the Petitioner for additional expenditure on emission control system shall therefore be guided by order dated 30.9.2021 in Petition No. 467/MP/2019.

**Operational Norms**

50. The operational norms considered by the Petitioner in Form-3 of the petition is as follows:

| | |
|---|---|
| Normative Annual Plant Availability Factor (NAPAF) % | 85 |
| Gross Station Heat Rate (kcal/kwh) | 2382.00 |
| Auxiliary Power Consumption % | 5.75 |
| Specific Oil Consumption (ml/kwh) | 0.50 |

***(a) Normative Annual Plant Availability Factor***

51. Regulation 49 of the 2019 Tariff Regulations provides as follows:

*(A) Normative Annual Plant Availability Factor (NAPAF)*
*(a) For all thermal generating stations, except those covered under clauses (b), (c), (d), & (e) - 85%.*

52. The Petitioner has considered NAPAF of 85% during the 2019-24 tariff period as per Regulation 49(A)(a) of 2019 Tariff Regulations and hence, the same is allowed.

***(b) Station Heat Rate***

53. Regulation 49(C)(b)(i) of the 2019 Tariff Regulations provides as follows:

*"(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 ($^0$C)* | *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* |

*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 Subbituminous 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."*

54. The Petitioner has furnished the Gross Station Heat Rate as 2382.00 kCal/kWh, based on the Guaranteed Design Gross Turbine Cycle Heat Rate of 1935.90 (kCal/kWh)[3] and Design / Guaranteed Boiler Efficiency of 85.34(%), as provided in the Form 2 of the petition as follows:

| | | |
|---|---|---|
| Main Steams Pressure at Turbine inlet | (kg/Cm$^2$) | 170 |
| Main Steam Temperature at Turbine inlet | ($^o$C) | 537 |
| Reheat Steam Temperature at Turbine inlet | ($^o$C) | 565 |
| Type of BFP | (No.) | Steam Driven |
| Guaranteed Design Gross Turbine Cycle Heat Rate | (kCal/kWh)[3] | 1935.90 |
| Design / Guaranteed Boiler Efficiency | (%) | 85.34 |

55. It is observed that the Petitioner, while computing the Station Heat Rate, has failed to take note that the Design Heat Rate of a generating unit is required to be computed, based on the heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure. Therefore, the Station Heat Rate is required to be recomputed as per details provided in the Form-2 of the petition. The Petitioner, in Form-2 of the petition, has furnished the design turbine cycle heat rate and boiler efficiency of the generating station as 1935.90 kcal/kWh and 85.34% respectively. Accordingly, the unit design heat rate is worked out as 2268.46 kcal/kWh (1935.90/0.8534).

56. Considering the design parameters of the generating station, for the pressure rating of 170 Kg/cm2, super heater temperature of 537$^o$C and re-heater temperature of 565$^0$C, the maximum design unit heat rate is 2250 kCal/kWh, considering the Max Turbine Heat rate of 1935.00 kCal/kWh and boiler efficiency of 86%, as per the 2019 Tariff Regulations. The design heat rate of 2268.46 kCal/kWh, is more than the ceiling design heat rate of 2250.00 kCal/kWh, as provided in the 2019 Tariff Regulations. However, in terms of the above regulation, 1935.00 kCal/kWh is the maximum Turbine

Heat Rate, and the Petitioner has furnished the same as 1935.90 kcal/kWh. Further, where the boiler efficiency is below 86% for Sub-bituminous Indian coal, the same shall be considered as 86%. Therefore, the Turbine Cycle Heat rate and boiler efficiency has been considered as 1935.00 kcal/kWh and 86% respectively, for computation of design heat rate. The design heat rate of the generating station works out as 2250.00 kCal/kWh (i.e., 1935.00/0.86), which is equal to the ceiling design heat rate of 2250.00 kCal/kWh. Hence, the GSHR has been worked out as 2362.50 kCal/kWh = (1.05 x 2250.00) and the same has been considered for the purpose of tariff.

### *(c) Auxiliary Power Consumption*

57. Regulation 49(E)(a)(ii) of the 2019 Tariff Regulations provides for Auxiliary Power Consumption as follows:

> *"49(E) Auxiliary Energy Consumption*
>
> *(a) Coal-based generating stations except at (b) below:*

| | *With Natural Draft cooling tower or without cooling tower* |
|---|---|
| *(i) 200 MW series* | *8.5%* |
| *(ii) 300 MW and above* | |
| *Steam driven boiler feed pumps* | *5.75%* |
| *Electrically driven boiler feed pumps* | *8.0%* |

> *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:*

58. The Petitioner has claimed Auxiliary Power Consumption (APC) of 5.75% as per Regulation 49(E)(a)(ii) of the 2019 Tariff Regulations, and therefore same has been allowed.

### *(d) Specific Oil Consumption*

59. Regulation 49(D)(a) of 2019 Tariff Regulations, provides for Secondary fuel oil consumption of 0.50 ml/kWh, for coal-based generating stations. As the Secondary

fuel oil consumption considered by the Petitioner is as per the said regulations, the same is allowed for determination of tariff for the 2019-24 period.

60. Based on the above, the operational norms considered for determination of energy charges for the generating station for the 2019-24 tariff period are as under:

| | |
|---|---|
| Normative Annual Plant Availability Factor (NAPAF) (%) | 85 |
| Heat Rate (kCal/kWh) | 2362.50 |
| Auxiliary Power Consumption (%) | 5.75 |
| Specific Oil Consumption (ml/kWh) | 0.50 |

## Interest on Working Capital

61. Regulations 34(1)(a), (3) and (4) and 3(7) of the 2019 Tariff Regulations specify as follows:

***"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 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) xxxx*

*(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."*

*"3. Definitions. - In these regulations, unless the context otherwise requires:-*

*(7) 'Bank Rate' means the one year marginal cost of lending rate (MCLR) of the State Bank of India issued from time to time plus 350 basis points;"*

### *Fuel Cost for computation of working capital*

62. The Petitioner has claimed ECR of 3.520 Rs/kWh and fuel component in working capital as follows:

***(Rs. in lakh)***

| | **2019-20** | **2020-21** | **2021-22** | **2022-23** | **2023-24** |
|---|---|---|---|---|---|
| Cost of coal for 50 days | 32934.66 | 32934.66 | 32934.66 | 32934.66 | 32934.66 |
| Cost of Secondary fuel oil for 2 months | 282.70 | 281.93 | 281.93 | 281.93 | 282.70 |

63. The Petitioner has claimed the fuel component cost in working capital and ECR based on:

a) Operational norms as per 2019 Tariff Regulations.
b) Price and "as received" GCV of coal {after reducing the same by 85 kcal/kWh in terms of Regulation 43(2)(b)} procured for the three months of October 2018, November 2018, and December 2018, and
c) Price and GCV of secondary fuel oil for the three months of October 2018, November 2018, and December 2018.

64. It is observed that the Petitioner has furnished revised Form-15, indicating the opening stock of coal and coal received during the months of October 2018, November 2018 and December 2018, separately. On perusal of the data furnished by the Petitioner, it is observed that the Petitioner, while computing the landed cost of fuel, has considered the opening stock of coal for the months of October 2018, November 2018 and December 2018 (closing stock of the coal for the previous months). However, in terms of the Regulation 39 of the 2019 Tariff Regulations, the computation of ECR and associated fuel components, in interest on working capital, is based on the landed price and GCV of fuel, which means that the fuel received during the specified three months (October 2018, November 2018 and December 2018) is only to be considered, without opening stock. Similarly, while calculating the weighted average price of the coal, the Petitioner has used the normative Transit & Handling loss of 0.8005% for October 2018, 0.8005% for November 2018 and 0.8006% for December 2018 which is more than applicable normative Transit &Handling loss of 0.80% for the generating station. Accordingly, the normative cost of coal for 50 days and normative Transit & Handling loss of 0.80% has been considered for the calculation of working capital requirements. After excluding the opening stock value, we have worked out the weighted average landed cost and weighted average GCV of

coal for working out the fuel component in working capital for the months of October 2018, November 2018 and December 2018 as follows:

| | Claimed | Allowed |
|---|---|---|
| Weighted average price of coal (Rs./MT) | 5135.17 | 5124.96 |
| Weighted average GCV of coal (kCal/kg) * | 3704.88 | 3706.61 |
| Weighted average price of oil (Rs./kl) | 46363.05 | 34387.42 |
| Weighted average GCV of oil (kCal/l) | 9809.72 | 9809.66 |

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

65. The revised GCV is further reduced by a margin of 85 kCal/Kg towards storage losses and the revised price of landed cost of coal and GCV of oil as furnished, has been considered. The fuel components in working capital are allowed as under:

***(Rs. in lakh)***

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Cost of Coal/Lignite for Stock (20 Days) | 13033.76 | 13033.76 | 13033.76 | 13033.76 | 13033.76 |
| Cost of Coal/Lignite for Generation (30 Days) | 19550.64 | 19550.64 | 19550.64 | 19550.64 | 19550.64 |
| Cost of Secondary fuel oil 2 months | 209.68 | 209.11 | 209.11 | 209.11 | 209.68 |

***Energy Charge Rate (ECR)***

66. The Petitioner has claimed ECR (ex-bus) of 3.520 Rs/kWh, based on the weighted average price, GCV of coal & oil procured and burnt for the preceding months of October 2018, November, 2018 and December, 2018. ECR, as worked out, based on the operational norms specified under the 2019 Tariff Regulations and on "as received" GCV of coal for the preceding three months i.e., October 2018, November, 2018 and December 2018, have been considered for allowing two months of energy charge in working capital as follows:

| Description | Unit | 2019-24 |
|---|---|---|
| Capacity | MW | 980.00 |
| Gross Station Heat Rate | kCal/kWh | 2362.50 |
| Auxiliary Energy Consumption | % | 5.75 |
| Weighted average GCV of oil | kCal/lit | 9809.66 |
| Weighted average GCV of coal | kCal/kg | 3706.61 (3791.61-85.00) |
| Weighted average price of oil | Rs/KL | 34387.42 |

| Description | Unit | 2019-24 |
|---|---|---|
| Weighted average price of Coal | Rs/MT | 5124.96 |
| Rate of energy charge ex-bus | Rs/kWh | 3.477 |

***Working capital for O&M Expenses for one month***

67. O&M expenses for one (1) month claimed by the Petitioner for the purpose of working capital (including water charges and security expenses) are as follows:

***(Rs. in lakh)***

| 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|
| 1995.74 | 2078.77 | 2166.07 | 2258.22 | 2354.90 |

68. Regulation 34(1)(a)(vi) of the 2019 Tariff Regulations provides for O&M expenses (including water charges and security expenses) for one month. Accordingly, the O&M expenses (I month) component of working capital is allowed as follows:

***(Rs. in lakh)***

| 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|
| 1969.45 | 2038.73 | 2112.11 | 2188.25 | 2266.37 |

***Working capital for Maintenance Spares***

69. Regulation 34(1)(a)(iv) of the 2019 Tariff Regulations provides for Maintenance spares @ 20% of the O&M expenses including water charges and security expenses. Accordingly, maintenance spares have been allowed as under:

***(Rs. in lakh)***

| 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|
| 4726.68 | 4892.95 | 5069.05 | 5251.81 | 5439.28 |

70. The difference between the claimed O&M expenses for one (1) month and Maintenance spares by the Petitioner and those allowed as above, is only on account of variation in the water charges and security expenses claimed by the Petitioner and those allowed in this order.

***Working capital for Receivables***

71. Regulation 34(1)(a)(v) of the 2019 Tariff Regulations provides for Receivables

for 45 days. Accordingly, after taking into account the mode of operation of the generating station on secondary fuel, the Receivable component of working capital is allowed as follows:

*(Rs. in lakh)*

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Energy charge for 45 days | 29481.86 | 29481.86 | 29481.86 | 29481.86 | 29481.86 |
| Fixed charge for 45 days | 11968.00 | 11761.18 | 11530.74 | 11809.05 | 10408.33 |
| | **41449.85** | **41243.04** | **41012.60** | **41290.91** | **39890.19** |

72. As per Regulation 34(2) of 2019 Tariff Regulations, the cost of coal shall be based on landed fuel cost taking into account normative transit and handling losses in terms of Regulation 39 of the 2019 Tariff Regulations and gross calorific value of fuel as per actual weighted average for the third quarter of preceding financial year. Hence, the Petitioner is directed to furnish the details of quantity of coal as per Regulation 34(2) of the 2019 Tariff Regulations at the time of truing up of tariff. The Petitioner is also directed to submit the details strictly as provided in Forms/ Annexures attached to the 2019 Tariff Regulations.

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

***Rate of Interest on working capital***

74. 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 01.04.2019 + 350 bps) for the year 2019-20, 11.25% (i.e. 1 year SBI MCLR of 7.75% as on 01.04.2020 + 350 bps) for the year 2020-21 and 10.50% (i.e. 1 year SBI MCLR of 7.00% as on 01.04.2021 + 350 bps) for the period 2021-24.

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

*(Rs. in lakh)*

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Cost of Coal - 20 days (A) | 13033.76 | 13033.76 | 13033.76 | 13033.76 | 13033.76 |
| Cost of Coal - 30 days (B) | 19550.64 | 19550.64 | 19550.64 | 19550.64 | 19550.64 |
| Cost of Secondary fuel- 2 Months (C) | 209.68 | 209.11 | 209.11 | 209.11 | 209.68 |
| Maintenance Spares- 20% of O&M (D) | 4726.68 | 4892.95 | 5069.05 | 5251.81 | 5439.28 |
| Receivables - 45 days (E) | 41449.85 | 41243.04 | 41012.60 | 41290.91 | 39890.19 |
| O&M expenses - 1 month (F) | 1969.45 | 2038.73 | 2112.11 | 2188.25 | 2266.37 |
| **Total Working Capital (G) = (A+B+C+D+E+F)** | **80940.06** | **80968.22** | **80987.26** | **81524.47** | **80389.92** |
| Rate of Interest (H) | 12.05% | 11.25% | 10.50% | 10.50% | 10.50% |
| **Total Interest on Working capital (I) = (G x H)** | **9753.28** | **9108.92** | **8503.66** | **8560.07** | **8440.94** |

## Annual Fixed Charges

76. Accordingly, the annual fixed charges approved for the generating station for the 2019-24 tariff period is summarised below:

*(Rs. in lakh)*

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 |
|---|---|---|---|---|---|
| Depreciation | 25069.38 | 25069.38 | 25132.46 | 26457.02 | 14235.54 |
| Interest on Loan | 10889.82 | 8759.33 | 6518.26 | 5783.54 | 5420.10 |
| Return on Equity | 27993.86 | 27993.86 | 28027.49 | 28724.89 | 29361.43 |
| Interest on Working Capital | 9753.28 | 9108.92 | 8503.66 | 8560.07 | 8440.94 |
| O&M Expenses | 23633.39 | 24464.75 | 25345.27 | 26259.03 | 27196.42 |
| **Total** | **97339.73** | **95396.25** | **93527.13** | **95784.55** | **84654.44** |

77. The annual fixed charges approved as above, is subject to truing-up in terms of Regulation 13 of the 2019 Tariff Regulations

## Application Fee and Publication Expenses

78. The Petitioner has sought reimbursement of the fees paid by it for filing of the tariff petition 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. In view of the above, the Petitioner is entitled for reimbursement of the filing fees and publication expenses in connection with the filing of this petition, directly from the beneficiaries, on pro-rata basis, in accordance with Regulation 70(1) of the 2019 Tariff Regulations.

79. Similarly, RLDC Fees & Charges paid by the Petitioner in terms of the Central Electricity Regulatory Commission (Fees and Charges of Regional Load Dispatch Centre and other related matters) Regulations, 2019, shall be recovered from the beneficiaries. In addition, the Petitioner is entitled recovery of statutory taxes, levies, duties, cess etc. levied by the statutory authorities in accordance with the 2019 Tariff Regulations.

80. Annexure-I attached herewith form part of the order.

81. Petition No. 2/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)*

| Sr. No. | Name of Asset | Gross Block as on 31.3.2019 | CERC Depreciation Rate | Cumulative Depreciation as on 31.3.2019 |
|---|---|---|---|---|
| 1 | Freehold Land | 7941.18 | 0.00% | |
| 2 | Roads, bridges, culverts & helipads | 3478.07 | 3.34% | 116.17 |
| 3 | Main Plant Buildings | 35632.62 | 3.34% | 1190.13 |
| 4 | Other Buildings | 5917.40 | 3.34% | 197.64 |
| 5 | Temporary erection | 0.00 | 100.00% | 0.00 |
| 6 | Water supply, drainage & sewage | 675.39 | 5.28% | 35.66 |
| 7 | MGR track and signaling system | 767.29 | 5.28% | 40.51 |
| 8 | Railway siding | 5844.35 | 5.28% | 308.58 |
| 9 | Earth dam reservoir | 4001.44 | 5.28% | 211.28 |
| 10 | Plant and machinery | 424047.18 | 5.28% | 22389.69 |
| 11 | Furniture and fixtures | 2135.91 | 6.33% | 135.20 |
| 12 | Other Office Equipments | 1022.55 | 6.33% | 64.73 |
| 13 | EDP, WP machines & SATCOM equipment | 975.68 | 6.33% | 61.76 |
| 14 | Vehicles including speedboats | 27.07 | 9.50% | 2.57 |
| 15 | Construction equipment | 1541.26 | 5.28% | 81.38 |
| 16 | Electrical installations | 2021.03 | 5.28% | 106.71 |
| 17 | Communication equipment | 327.86 | 6.33% | 20.75 |
| 18 | Hospital equipment | 179.49 | 5.28% | 9.48 |
| 19 | Laboratory and workshop equipment | 70.20 | 5.28% | 3.71 |
| 20 | Software | 265.67 | 15.00% | 39.85 |
| 21 | Capex on assets not owned by the company | 0.00 | 5.28% | 0.00 |
| 22 | Right of Use - Others | 23992.92 | 5.28% | 1266.83 |
| | **Total** | **520864.56** | **-** | **26282.63** |
| | **Weighted Average Rate of Depreciation (%)** | | | **5.0460** |