

Net Repayment (G) = (E-F)	13734.70	13694.96	13764.02	6108.45	6230.00
Net Loan Closing (H) = (C+D-G)	50959.13	37516.74	23806.34	17829.41	11599.41
Average Loan (I) = (C+H)/2	57691.99	44237.94	30661.54	20817.88	14714.41
Weighted Average Rate of Interest on Loan (J)	8.2396%	8.2396%	8.2396%	8.2396%	8.2396%
<b>Interest on Loan (K) = (IxJ)</b>	<b>4753.58</b>	<b>3645.02</b>	<b>2526.39</b>	<b>1715.31</b>	<b>1212.41</b>

## Depreciation

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

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

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

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

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

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

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

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

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

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



*capital cost while computing depreciable value of the asset.*

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

*Provided that the remaining depreciable value as on 31<sup>st</sup> 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.”*

64. The cumulative depreciation amounting to Rs. 132306.11 lakh as on 31.3.2019 as considered in order dated 4.8.2022 in Petition No. 192/GT/2020, has been considered as on 1.4.2019. The value of freehold land has been considered as nil. Accordingly, the balance depreciable value, before providing depreciation for the year 2019-20, works out to Rs.116997.37 lakh. As on 1.4.2019, the used life of the generating station i.e., 9.69 years is less than 12 years from the effective station COD of 22.7.2009. Accordingly, depreciation has been calculated by applying the weighted average rate of depreciation for the period from 2019-20 to 2021-22 and thereafter, depreciation has been calculated by spreading over the balance depreciable value over the balance life of the generating station. The Petitioner has considered WAROD as 5.13%, which is same as those claimed by the Petitioner in 2018-19 in Petition 192/GT/2020. However, it is observed that the Commission in its order dated 4.8.2022 in Petition 192/GT/2020 had approved the depreciation rate of 4.9589% for 2018-19. Accordingly, the same has been considered for the calculation of depreciation. Further, the value of IT assets has been considered as



submitted by the Petitioner. Necessary calculations in support of depreciation are as under:

	(Rs. in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Average Capital Cost (A)	276969.89	277342.42	277561.13	277693.37	277787.31
Value of freehold land included above (B)	0.00	0.00	0.00	0.00	0.00
Value of IT assets (C)	419.26	419.26	419.26	419.26	419.26
Aggregated depreciable value (D) = (A-B-C)x90%+C	249314.83	249650.11	249846.95	249965.96	250050.50
Remaining aggregate depreciable value at the beginning of the year (E) =(D-cumulative depreciation at 'J' at the end of previous s. year)	117008.73	103609.30	90111.19	76466.18	70442.27
No. of completed years at the beginning of the year (F)	9.69	10.69	11.69	12.69	13.69
Balance useful life at the beginning of the year (G)	15.31	14.31	13.31	12.31	11.31
Weighted Average Rate of Depreciation (WAROD) (H)	4.9589%	4.9589%	4.9589%	---	---
Depreciation during the year (I)	13734.70	13753.17	13764.02	6213.25	6230.00
Cumulative Depreciation at the end of the year (before adjustment for de-capitalization) (J) = (cumulative depreciation at 'J' at the end of previous. year + I)	146040.80	159793.98	173499.78	179713.04	185838.23
Less: Depreciation adjustment on account of de-capitalization (K)	0.00	58.22	0.00	104.81	0.00
<b>Cumulative depreciation at the end of the year (L) = (J-K)</b>	<b>146040.80</b>	<b>159735.76</b>	<b>173499.78</b>	<b>179608.23</b>	<b>185838.23</b>

\*Cumulative Depreciation as on 31.3.2019 is Rs. 132306.11 lakh

### O&M Expenses

65. The O&M expenses claimed by the Petitioner are as under:

	(Rs. in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
O&M expenses under Regulation 35(1)(1) of the 2019 Tariff Regulations	16480.00	17060.00	17655.00	18280.00	18920.00



O&M expenses under Regulation 35(6) of the 2019 Tariff Regulations:					
- Water Charges (Net)	1293.16	1293.16	1293.16	1293.16	1293.16
- Capital Spares consumed	0.00	0.00	0.00	0.00	0.00
-Security Expenses	2054.87	2260.36	2486.39	2735.03	3008.54
O&M expenses under Regulation 35(3) of the 2019 Tariff Regulations:					
- O&M expenses for 7 no. of bays	225.05	232.96	241.15	249.62	258.37
- O&M expenses for 13.794 Km double ckt line for associated transmission line	12.15	12.58	13.02	13.48	13.95
- O&M expenses for 6 no. of transformers	511.38	529.96	548.54	568.48	587.16
<b>Total O&amp;M Expenses</b>	<b>20576.61</b>	<b>21389.02</b>	<b>22237.27</b>	<b>23139.77</b>	<b>24081.17</b>

66. The normative O&M expenses claimed by the Petitioner, in terms of the Regulation 35(1)(1) of the 2019 Tariff Regulation, is in order and is therefore allowed. However, in the O&M expenses claimed under Regulation 35(3) of the 2019 Tariff Regulations, it has been observed that the Petitioner has included O&M expenses towards Generator Transformer (2 Nos.), Inter-connecting Transformer (2 Nos.), Unit Auxiliary Transformer (2 Nos.) and Station Transformer (2 Nos.) while claiming the O&M expenses for the associated transmission facilities. The Commission is of the view that the O&M expenses towards these transformers had already been covered under the normative O&M expenses of the generating station under Regulation 35(1)(1) of the 2019 Tariff Regulations and therefore the claim for transformers under Regulation 35(3) of the 2019 Tariff Regulations is not allowed. However, the O&M expenses for 7 no. of 400 kV bays and 13.794 Ckt Km claimed under Regulation 35(3) of 2019 Tariff Regulations have only been allowed.



## Water Charges

67. The first proviso to Regulation 35(6) of the 2019 Tariff Regulations provides for the claim for Water charges as under:

*“35(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;*

xxxxxxx.”

68. The actual water charges claimed by the Petitioner in Petition 192/GT/2020 for the 2014-19 tariff period and allowed by order dated 4.8.2022 are as under:

	<i>(Rs. in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Water Charges Claimed	1275.02	1293.16	1293.16	1393.16	1293.16
Water Charges allowed	1275.02	1293.16	1293.16	1393.16	1293.16

69. The water charges allowed, on projected basis, by order dated 4.8.2022 in Petition No. 192/GT/2020 are as under:

	<i>(Rs. in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Actual Water charges	1855.02	1873.16	1873.16	1873.16	1873.16
Less: Adjustment of water charges towards advance for Mohad reservoir	580.00	580.00	580.00	580.00	580.00
<b>Net water charges allowed</b>	1275.02	1293.16	1293.16	1393.16	1293.16

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

Description	Remarks
Type of Plant	Coal Based Power Plant
Type of cooling water system	Closed Circuit Cooling System
Yearly allocation of water	16990107.96 cubic meters
Consumption of water	15291097 cubic meters



Rate of water charges*	Rs.12.25/Cubic Meter
Total water charges*	Rs.1873.16 lakh

\* As per truing up petition filed for the instant station for 2018-19

71. For the 2019-24 tariff period, the Petitioner has claimed water charges, on the basis of the actual water charges claimed for 2018-19 without any escalation.

72. The Respondent CSPDCL has submitted that the Petitioner has indicated only the amount of water consumed, and not the power generated by the Petitioner. It has also submitted that as per MOEF &CC Notification dated 7.12.2015, the Thermal power plants installed before 1st January 2017, must meet specific water consumption up to Maximum of 3.5 m3/Mwh. Accordingly, the Respondent has submitted that the water charges may be allowed only after prudence check. The Petitioner has however, clarified that the claim is within the norms prescribed in the said notification. Further, the Petitioner has submitted that it has claimed water charges as per the agreement entered into between Water Resource Department, Chhattisgarh and NSPCL. As per the said agreement, the Petitioner is liable to pay water charges for at least 90% of allocation. The Petitioner has also submitted that the water charges have been claimed on the same basis, as approved for 2014-19 tariff period.

73. We have examined the matter. It has been observed that the water charges claimed in the present Petition are based on the actual water charges paid in 2018-19, based on the audited accounts of 2018-19. The same was approved by order dated 4.8.2022 in Petition 192/GT/2020. In view of the above, the water charges claimed by the Petitioner, on projection basis, for the 2019-24 tariff period is allowed. However, the petitioner is directed to review the contracted water as per actual requirement. Accordingly, the water charges allowed is as under:



		<i>(Rs. in lakh)</i>				
		<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Water charges	claimed	1293.16	1293.16	1293.16	1293.16	1293.16
Water charges	allowed	1293.16	1293.16	1293.16	1293.16	1293.16

74. However, the Petitioner is directed to submit the current status of Rs. 110 crore as advance paid to water department shown under the head “part of loans and advances” in Petition 308/GT/2009 at the time of truing up of 2019-24 tariff period.

### **Security Expenses**

75. The second proviso to Regulation 35(6) of the 2019 Tariff Regulations provides for the claim for Security expenses as under:

*“35(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;*

*xxxx”*

76. The security expenses claimed by the Petitioner is as under:

					<i>(Rs. in lakh)</i>
<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	
2054.87	2260.36	2486.39	2735.03	3008.54	

77. The Petitioner has submitted that the security expenses has been claimed, based on the estimated expenses for 2019-24 tariff period and shall be subject to adjustment, based on actuals, at the time of truing up of tariff.

78. We have examined the matter. The Petitioner has claimed projected security expenses for the 2019-24 tariff period, but has not furnished the assessment of security requirement, as required, under the provisions of the 2019 Tariff Regulations. Accordingly, the Petitioner is directed to furnish the requisite details for carrying out the prudence check of the security expenses, at the time of truing up of tariff. With regards to



the present claim of the Petitioner, it has been observed that the Petitioner has claimed security expenses by applying an escalation factor of 10% for each year of the 2019-24 tariff period. However, the Petitioner has not submitted any justification for the security expenses claimed for base year i.e., 2019-20. Further, it has been observed that the Petitioner, in Petition 192/GT/2020, had submitted the actual O&M expenses for the 2014-19 tariff period vide affidavit dated 16.7.2021, wherein the actual security expenses incurred for 2018-19 is stated to be Rs.1663.67 lakh. Thus, the security expenses claimed by the Petitioner for 2019-20 i.e., Rs. 2054.87 lakh is around 24% higher than the actual expenses for 2018-19. In our view, the escalation of 24% is not justified. Accordingly, the Commission has considered an escalation of 10% on the actual security expenses of 2018-19 submitted by the Petitioner vide affidavit dated 16.7.2021 in Petition 192/GT/2020 to arrive at the security expenses for 2019-20 and an escalation of 10% has been considered for each year of the 2019-24 tariff period. Accordingly, the security expenses claimed and allowed, for the generating station for the 2019-24 tariff period is as under:

	<i>(Rs. in lakh)</i>				
	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Security expenses claimed	2054.87	2260.36	2486.39	2735.03	3008.54
Security expenses allowed	1830.04	2013.04	2214.34	2435.78	2679.36

### **Capital Spares**

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





80. Accordingly, the total O&M expenses allowed to the generating station for the 2019-24 tariff period is as under:

	(Rs. in lakh)				
	2019-20	2020-21	2021-22	2022-23	2023-24
Normative O&M expenses claimed under Regulation 35(1)(1) of the 2019 Tariff Regulations (a)	16480.00	17060.00	17655.00	18280.00	18920.00
Normative O&M expenses allowed under Regulation 35(1)(1) of the 2019 Tariff Regulations (a)	16480.00	17060.00	17655.00	18280.00	18920.00
Normative O&M expenses claimed under Regulation 35(3) of the 2019 Tariff Regulations: (c)	748.58	775.50	802.71	831.58	859.48
Normative O&M expenses allowed under Regulation 35(3) of the 2019 Tariff Regulations (d)	237.20	245.54	254.17	263.10	272.32
Water Charges (Net) claimed under Regulation 35(6) of the 2019 Tariff Regulations (e)	1293.16	1293.16	1293.16	1293.16	1293.16
Water Charges (Net) allowed under Regulation 35(6) of the 2019 Tariff Regulations (f)	1293.16	1293.16	1293.16	1293.16	1293.16
Security Expenses claimed under Regulation 35(6) of the 2019 Tariff Regulations (g)	2054.87	2260.36	2486.39	2735.03	3008.54
Security Expenses allowed under Regulation 35(6) of the 2019 Tariff Regulations (h)	1830.04	2013.04	2214.34	2435.78	2679.36
Total O&M expenses claimed under Regulation 29 of the 2014 Tariff Regulations (a + c + e + g + i)	20576.61	21389.02	22237.26	23139.77	24081.18
<b>Total O&amp;M expenses allowed under Regulation 29 of the 2014 Tariff Regulations (b + d + f + h + j)</b>	<b>19840.40</b>	<b>20611.74</b>	<b>21416.68</b>	<b>22272.04</b>	<b>23164.83</b>

### Operational Norms

81. The operational norms in respect of the generating station i.e. normative annual plant availability factor, gross station heat rate, specific fuel oil consumption and auxiliary power consumption are discussed as under:

#### **Normative Annual Plant Availability Factor**

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



“(A) Normative Annual Plant Availability Factor (NAPAF)

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

83. In terms of Regulation 49(A)(a) of the 2019 Tariff Regulations, the Petitioner has considered Normative Annual Plant Availability Factor of 85% during the 2019-24 tariff period, the same is allowed.

**Gross Station Heat Rate (kCal/kWh)**

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

“(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 (°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

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



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

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

*Provided also that where the boiler efficiency is lower than 86% for 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.”*

85. The Petitioner has considered the Gross Station Heat Rate (GSHR) of 2415 kcal/kWh for the 2019-24 tariff period. It is observed that the Commission in its order 2.8.2016 in Petition 257/GT/2014, had considered the design heat rate of 2300 kcal/kWh. Accordingly, considering the normative deviation of 5% in terms of the provisions of the 2019 Tariff Regulations, the Gross Station Heat Rate (GSHR) works out as 2415 kcal/kWh. The Petitioner has also claimed the Normative Station Heat Rate of 2415 kcal/kWh, which is in line with the provisions of the 2019 Tariff Regulations and hence allowed.

### **Secondary Fuel Oil Consumption**

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

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



87. In terms of Regulation 49(D)(a) of the 2019 Tariff Regulations, the Petitioner has considered the secondary fuel oil consumption of 0.50 ml/kWh during the 2019-24 tariff period and the same is allowed.

### **Auxiliary Power Consumption**

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

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

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

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

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

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

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

89. In terms of Regulation 49(E)(a) of the 2019 Tariff Regulations, the Petitioner has considered the Auxiliary Energy Consumption of 9.00% (8.5% for 200 MW series generating stations plus 0.5% for IDCT) during the 2019-24 tariff period and the same is allowed.

### **Interest on Working Capital**

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*Provided that in case of new generating station the cost of fuel for the first financial year shall be considered based on landed fuel cost (taking into account normative transit and handling losses in terms of Regulation 39 of these regulations) and gross*



*calorific value of the fuel as per actual weighted average for three months as used for infirm power preceding date of commercial operation for which tariff is to be determined.*

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

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

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

### **Fuel Cost and Energy Charges in Working Capital**

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

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

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

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

$$ECR = \{(SHR - SFC \times CVSF) \times LPPF / CVPF + SFC \times LPSFi + LC \times LPL\} \times 100 / (100 - AUX)$$

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

$$ECR = SHR \times LPPF \times 100 / \{(CVPF) \times (100 - AUX)\}$$

Where,

*AUX = Normative auxiliary energy consumption in percentage.*

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

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

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

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

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

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



*LC = Normative limestone consumption in kg per kWh;*

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

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

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

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

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

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

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

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

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

94. Accordingly, the Petitioner has claimed the ECR of Rs.2.347 per kWh and the following fuel cost components in working capital for the 2019-24 tariff period:

	<i>(Rs. in lakh)</i>				
	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Cost of Coal (50 days generation corresponding to NAPAF)	10797.84	10797.84	10797.84	10797.84	10797.84
Cost of secondary fuel oil (2 months generation corresponding to NAPAF)	114.97	114.66	114.66	114.66	114.97

95. On perusal of the Form-15 furnished by the Petitioner vide affidavit dated 29.6.2021, it is observed that the Petitioner has included opening stock of coal and its corresponding value while computing weighted average price of coal for the month of October 2018, November 2018 and December 2018. However, in terms of Regulation 34(2) of the 2019 Tariff Regulations the computation of cost of fuel as part of IWC is to



be based on the landed price and GCV of fuel as per actuals, which means that only fuel received during these three months is only to be considered and no opening stock shall be included therein. Accordingly, the opening stock of coal and its corresponding values have been excluded while computing the weighted average price and GCV of coal. Based on the above the weighted average price and GCV of coal and oil claimed and allowed for the 2019-24 tariff period, subject to truing up is as under:

	<b>Claimed</b>	<b>Allowed</b>
Weighted average price of coal (Rs. /MT)	2915.28	2901.40
Weighted average GCV of Coal (kcal/kg)	3318.49	3317.99
Weighted average price of oil (Rs. /KL)	36957.30	36928.98
Weighted average GCV of oil (kcal/KL)	9883.67	9884.07

\* The change in claimed GCV and price as compared to allowed GCV and price is due to reason that Petitioner has considered simple average whereas weighted average has been considered for the purpose of tariff in line with the provisions of the 2019 Tariff Regulations.

96. Accordingly, the fuel component in working capital, Energy Charges and ECR claimed and allowed for the 2019-24 tariff period are as under:

	<b>Claimed</b>		<b>Allowed</b>	
	<b>2019-20 &amp; 2023-24</b>	<b>2020-21 to 2022-23</b>	<b>2019-20 &amp; 2023-24</b>	<b>2020-21 to 2022-23</b>
Cost of coal for 50 days of generation corresponding to NAPAF	10797.84		10748.05	
Cost of secondary fuel oil for 2 months of generation corresponding to NAPAF	114.97	114.66	114.89	114.57
<b>ECR (Rs. /kWh)</b>	2.347		2.336	

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

### **Working Capital for Maintenance Spares**

98. The Petitioner in has claimed maintenance spares in working capital as under:

<i>(Rs. in lakh)</i>				
<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
4115.32	4156.03	4447.45	4627.95	4816.23





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

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
3968.08	4122.35	4283.34	4454.41	4632.97

### **Working Capital for Receivables**

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

<i>(Rs. in lakh)</i>					
	2019-20	2020-21	2021-22	2022-23	2023-24
Variable Charges - for 45 days of generation corresponding to NAPAF	9757.24	9757.24	9757.24	9757.24	9757.24
Fixed Charges – for 45 days of generation corresponding to NAPAF	7055.68	7007.70	6942.80	6009.19	6047.18
<b>Total</b>	<b>16812.92</b>	<b>16764.94</b>	<b>16700.04</b>	<b>15766.43</b>	<b>15804.42</b>

### **Working Capital for O&M Expenses (1 month)**

101. The O&M expenses for 1 month as claimed by the Petitioner in Form-O is as under:

<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
1714.72	1731.68	1853.11	1928.31	2006.76

102. Regulation 34(1)(a)(vi) of the 2019 Tariff Regulations provide for O&M expenses equivalent to 1 month of the O&M expenses (including water charges and security expenses). Accordingly, O&M expenses equivalent to 1 month of the O&M expenses (including water charges and security expenses) allowed for the 2019-24 tariff period is as under: Accordingly, in terms of Regulation 34(1)(a)(vi) of the 2019 Tariff Regulations, one month's O&M expenses allowed is as under:



<i>(Rs. in lakh)</i>				
2019-20	2020-21	2021-22	2022-23	2023-24
1653.37	1717.65	1784.72	1856.00	1930.40

103. 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. 1 year 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, 10.50% (i.e. 1 year SBI MCLR of 7.00% as on 01.04.2021 + 350 bps) for the year 2021-22 and 10.50% (i.e. 1 year SBI MCLR of 7.00% as on 01.04.2022 + 350 bps) for the period 2022-24. Accordingly, Interest on working capital has been computed as under:

<i>(Rs. in lakh)</i>					
	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for Cost of Coal towards Stock (20 days corresponding to generation at NAPAF)	4299.22	4299.22	4299.22	4299.22	4299.22
Working Capital for Cost of Coal towards Generation (30 days corresponding to generation at NAPAF)	6448.83	6448.83	6448.83	6448.83	6448.83
Working Capital for Cost of Secondary fuel oil (2 months corresponding to generation at NAPAF)	114.89	114.57	114.57	114.57	114.89
Working Capital for Maintenance Spares 20% of Annual O&M expenses)	3968.08	4122.35	4283.34	4454.41	4632.97
Working Capital for Receivables – 45 days	16812.92	16764.94	16700.04	15766.43	15804.42
Working Capital for O&M expenses – 1 month	1653.37	1717.65	1784.72	1856.00	1930.40
<b>Total Working Capital</b>	<b>33297.31</b>	<b>33467.56</b>	<b>33630.73</b>	<b>32939.47</b>	<b>33230.73</b>
Rate of Interest	12.0500	11.2500	10.5000	10.5000	10.5000
<b>Interest on Working Capital</b>	<b>4012.33</b>	<b>3765.10</b>	<b>3531.23</b>	<b>3458.64</b>	<b>3489.23</b>

### Annual Fixed Charges

104. Accordingly, the annual fixed charges approved for the 2014-19 tariff period for the generating station is summarized as under:



(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	13734.70	13753.17	13764.02	6213.25	6230.00
Interest on Loan	4753.58	3645.02	2526.39	1715.31	1212.41
Return on Equity	15045.22	15065.21	15075.53	15081.97	15087.26
Interest on Working Capital	4012.33	3765.10	3531.23	3458.64	3489.23
O&M Expenses	19840.40	20611.74	21416.68	22272.04	23164.83
<b>Total</b>	<b>57386.22</b>	<b>56840.25</b>	<b>56313.84</b>	<b>48741.21</b>	<b>49183.73</b>

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

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

### **Application Fee and Publication expenses**

106. The Petitioner has sought reimbursement of fee paid by it for filing the petition for the 2019-24 tariff period and for publication expenses. The Petitioner shall be entitled for reimbursement of the filing fees and publication expenses in connection with the present petition, directly from the beneficiaries on pro-rata basis in accordance with Regulation 70(1) of the 2019 Tariff Regulations.

107. 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 for recovery of statutory taxes, levies, duties, cess etc. levied by the statutory authorities in accordance with the 2019 Tariff Regulations.

108. Petition No. 396/GT/2020 is disposed of in terms of the above.

**Sd/-**  
**(Pravas Kumar Singh)**  
**Member**

**Sd/-**  
**(Arun Goyal)**  
**Member**

**Sd/-**  
**(I.S Jha)**  
**Member**

