ODISHA ELECTRICITY REGULATORY COMMISSION
BIDYUT NIYAMAK BHAWAN
PLOT NO.-4, CHUNUKOLI, SHAILASHREE VIHAR
BHUBANESWAR - 751 021
****

Present: Shri U. N. Behera, Chairperson
Shri G. Mohapatra, Member

Case No. 44/2021

M/s. Nava Bharat Ventures Limited …… Petitioner
Vrs.
GRIDCO Ltd. & Another …..... Respondents

In the matter of: **Application under Ss.62 read with S.86 of the Electricity Act, 2003 for fixation of tariff for procurement of power from 60 MW Thermal Power Plan-IPP at Khadagaprasad, Dhenkanal as Independent Power Plant (IPP).**

For Petitioner: Shri R. P. Mahapatra, the authorized representative of M/s. NBVL,

Respondents: Ms. Susmita Mohanty, DGM (PP) and Shri S. K. Panda, GM, GRIDCO, Shri V. Wagle of TPCODL, Shri K. C. Nanda, DGM (Fin.), TPWODL, Ms. Malancha Ghose Asst. GM (RA), TPNODL, Shri Binod Nayak, Asst. GM (Comm.), TPSODL and Ms. Sonali Pattnaik, ALO, DoE, GoO.

ORDER

Date of hearing: 30.11.2021 **Date of order:12.01.2022**

The petitioner M/s. Nava Bharat Ventures Limited (M/s. NBVL) has filed the present application under S.62 read with S.86 of the Electricity Act, 2003 for fixation of tariff for procurement of power from 60 MW Thermal Power Plan-IPP at Khadagaprasad, Dhenkanal as Independent Power Plant (IPP).

2. The petitioner M/s. NBVL has two captive power plants of 90 MW (1x30 MW + 1x60 MW) capacity. The State Government had allowed M/s. NBVL to set up an IPP of 2x64 MW capacity as per the State Thermal Policy guidelines dated 08.08.2008. Accordingly, it had executed PPA with GRIDCO on 04.01.2011 to sell 12% of power towards state share at variable cost. State Government on 15.10.2014 again directed GRIDCO to sign the PPA with M/s. NBVL in respect of 1x64 MW thermal power plant as per the latest thermal policy of the State government treating the unit as an IPP. Accordingly, on 31.10.2014 a revised PPA was executed between GRIDCO and M/s. NBVL. As per the PPA, GRIDCO shall have right to purchase power from 64 MW IPP as per the following:-

"5.1 Availability, Scheduling and Despatch

5.1.1 GRIDCO shall at all times have the right on behalf of Government of Odisha to receive from the Thermal Power Station of NBVL-IPP 14% of the power, sent out at the Delivery Point at Energy Rate, if coal block(s) are allocated in favour of NBVL- IPP within the State of Odisha, otherwise NBVL-IPP shall provide 12% of the power, sent out at the Delivery Point at Energy Charge Rate/Variable Cost determined by OERC.

5.1.2 GRIDCO shall be entitled to further receive on behalf of Government of Odisha the entire infirm power, sent out from the Thermal Generating Plant at Energy Charge Rate determined by OERC.

5.1.3 NVVL-IPP shall duly incorporate a term in the Agreements with other Beneficiaries for sale of electricity or capacity pertaining to the Station, confirming the above rights of GRIDCO.

5.1.4 The Energy (variable) charge/cost shall be determined by the OERC.

5.1.5 The Energy (variable) Charge Rate/cost shall cover fuel cost and shall be worked out on the basis of above specified quantum of energy.

5.1.6 The operating and financial norms for calculation of tariff [Energy Charge Rate/Variable cost] shall be as laid down by the OERC from time to time

xxxxxxxxxxxxx"

3. The petitioner has submitted that while the matter stood thus, the Maximum Continuous Rating (MCR) test of the IPP unit was conducted on 18.12.2014 wherein, it was noticed that the average generation of the 64 MW IPP units was 61.76 MW. Hence, the petitioner, on 23.12.2014, requested the State Government to revise the installed capacity of the IPP from 64 MW to 60 MW. Accordingly, the Additional Secretary to Government, Department of Energy vide his Letter dated 03.08.2015 had directed GRIDCO to amend the PPA dated 31.10.2014 signed with M/s. NBVL considering the installed capacity of the IPP power plant as 60 MW instead of 64 MW. Accordingly, a supplementary PPA was executed between GRIDCO and M/s. NBVL on 23.09.2015 accepting the capacity of the IPP unit as 60 MW. Thereafter, the Commission vide its order dated 26.11.2015 passed in Case No. 78/2014 approved the said revised PPA dated 31.10.2014 and Supplementary PPA dated 23.09.2015. In this order the Commission had directed the petitioner to file the application for determination of Tariff for the State share of power to be purchased by GRIDCO from the subject IPP. The petitioner vide its letter dated 28.11.2015 intimated GRIDCO that the CoD of the 60 MW IPP was w.e.f. 00:00 hours of 30.11.2015 and on 17.12.2015 petitioner furnished the detailed calculation of generation cost as well as the variable cost of the IPP unit.

4. The petitioner had filed a petition before the Commission for determination of tariff of its IPP which was registered as Case No.2 of 2016. But due to some metering disputes between the parties and non-supply of power to GRIDCO from the FY 2015-16 onwards, the Commission vide its order dated 13.07.2017 had dismissed the case as withdrawn by M/s. NBVL. Thereafter, the petitioner after separating the bus bar of IPP and CGP units on 31.03.2021 and settling the disputes of metering as per PPA, on 27.04.2021 intimated GRIDCO for its willingness towards supply of 12% Energy Sent Out (ESO) of the IPP. The petitioner stated that due to non-allotment of long-term coal linkage, the ECR based on the e-auction coal is at higher side. But GRIDCO is insisting for the ECR of Rs.145.97 Paisa/KWh which is provisionally approved by the Commission in the BSP order of GRIDCO. After several correspondence with GRIDCO, the petitioner vide its letter dated 07.05.2021 intimated GRIDCO that they are agreed for the provisional ECR of Rs.145.97 Paisa/KWh as proposed by GRIDCO, as an interim measure till final determination of tariff by the Commission. Further, petitioner stated that GRIDCO was requested to provide a revolving LC for 12% ESO taking into account the indicative normative quantum per month, initially at the provisional rate and increase it according to the ECR determined by the Commission.

5. In its rejoinder, the Petitioner has made fresh calculation of ECR based on OERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, by taking into account the average cost based on the invoices towards cost of coal, coal transportation, coal feeding, levelling of coal yard, cost of lime stone, cost of HSD and coal unloading charges. The various parameters considered for determination of the ECR is given hereunder:

   i) Station Heat Rate:
      (a) The guaranteed heat rate of the turbine cycle as per the O & M Manual of M/s. ARIES Power System (I) Pvt. Ltd. is 9528.6 KJ/kWh or 2277.31 K.cal/kWh.
      (b) Guaranteed efficiency of boiler as per O & M Manual of M/s. THERMAX Babcock & Wilcox is 85% with F grade coal (3000 GCV).
      (c) Station Heat Rate = 2277.31 ÷ 0.85 = 2679.19 K.cal/kWh.
      (d) Gross Station Heat Rate = 1.045 x 2679.19 = 2799.75
      Say 2800 K.cal/kWh.

ii) Average Cost of Coal:

(a) Total quantity of coal purchased during month of April, May, June & July, 2021 : 85,000 MT

(b) Price of coal ex-mines : Rs.15,61,80,015.00

(c) Average cost of coal ex-mine end : Rs.1837.05

iii) Average transportation cost:

(a) Total quantity transported : 12092.51 MT

(b) Total transportation cost as per above : Rs.63,60,935.00

(c) Average cost of transportation : Rs.526.02/ MT.

iv) Average unloading cost:

(a) Total quantity unloaded : 37,889.75 MT

(b) Total unloading cost paid as per above : Rs. 6,19,792.00

(c) Average cost of unloading : Rs.16.35/ MT.

v) Cost of dozing for stacking and feeding of coal:

(a) Dozing charges per hour : Rs.1601.00

(b) Quantity dozed per hour : 55.0 MT

(c) Dozing charges per MT of coal : Rs. 29.11

(d) Total dozing cost for stacking and feeding (2x29.11): Rs.58.22/ MT

vi) Total Average unit cost of coal as fired

(a) Cost as per ii, iii, iv & v above (1837.05 + 526.02 + 16.35 + 58.22) :Rs.2437.64

(b) Loss in transit : 0.8 %

(c) Total unit cost of coal (2437.64 ÷ 0.992) :Rs.2457.29/ MT

vii) Average GCV of Coal :

(a) Average GCV (Billing Point) based on GCV and Quantity

$$\frac{(3401 \times 20000) + (3701 \times 35000) + (3101 \times 30000)}{85000} = 3418.65 \text{ K.cal/Kg}$$

(b) Moisture in Coal as per Test report dated 21.06.2019 of Griffith India Pvt. Ltd.

Total Moisture (TM) : 11.861 %
Inherent Moisture (IM) : 6.689 %

(c) GCV "as received basis"

$$\frac{GCV \times (1 - TM)}{(1 - IM)} = \frac{3418.65 \times (1 - 0.11861)}{(1 - 06689)} = 3229.16 \text{ K.cal/Kg}$$

(d) The GCV of Coal, as fired, was tested at the Quality Control Laboratory of NBVL Power Plant. The results of the Test are as follows:

Test dated	16.06.2021	: 3192.43 K.cal/ Kg
Test dated	07.07.2021	: 3121.37 K.cal/ Kg
Average		**: 3156.90 K.cal/Kg**

The above test data, being the actual value of GCV of as fired coal has been taken into account for calculation of ECR.

viii) Consumption of Lime Stone:

CEA in its letter No. 266 dated 20.02.2019, has determined the normative consumption of lime stone as under.

(a) The Sulphur Dioxide emission for unit installed from 1.1.2017 is 100 mg/ Nm^3.

(b) The specific consumption of lime stone of 85% purity for furnace injection in CFBC power plants as :

$$\frac{62.9 \times \text{Normative heat rate (k.cal/kWh)} \times \text{Sulphur content of coal (\%)}}{\text{GCV of Coal (k.cal/kg)}} \text{ g/kWh}$$

The Sulphur content of coal vide Test Report dated 21.06.2019 of M/s. Griffith India Pvt. Ltd. is 0.406%.

The specific consumption of lime stone for NBVL Power Plant works out to: $\frac{62.9 \times 2800 \times 0.406}{3229.16} = 22.14$ g/kWh.

(c) The total Ca as $CaCO_3$ in lime stone used in Power Plant is 75% vide Test Report dated 16.07.2020 of Grifith India Pvt. Ltd., against purity of 85% considered by CEA. Therefore the specific consumption of lime stone shall be:

$\frac{22.14 \times 0.85}{0.75} = 25.09$ g/kWh

(d) The unit cost of lime stone is Rs. 3465/ MT or Rs.3.465 / kg.

ix) Auxiliary Consumption:

(a) The Auxiliary consumption approved by the Commission for the 2 x 210 MW units of OPGC for the FY 2021-22, vide Order dated 26.03.2021 in Case No. 71/2020, is 9.5%.

(b) The generating units of OPGC are re-heat units with much larger capacity. The actual auxiliary consumption of the 60 MW IPP of NBVL is much higher. However, for the purpose of determination of ECR, normative auxiliary consumption has been taken as 10%.

6. The petitioner has stated that there is no continuous consumption of fuel oil during the operation of the boilers. But, secondary fuel oil (HSD) is used during the start-up. The ECR calculated below is without taking into account the consumption of secondary fuel oil. However, the petitioner requested to bill the actual cost of secondary fuel oil used during any month for start-up. The petitioner stated that they have considered the actual data certified by the Chartered Accountants and computed the ECR as under as per the formula given in the OERC Generation Tariff Regulations, 2020.

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

$= \{(2800 \times 2.457) \div 3156.90 + 0.025 \times 3.465\} \times \frac{100}{90}$

$= (2.179 + 0.086) \times \frac{10}{9}$

= **Rs. 2.517 / kWh.**

7. In view of the above, the Petitioner has prayed the Commission to approve the ECR @ Rs.2.517/kWh for state share of power from the subject 60 MW IPP, duly supported by LC as provided in the PPA.

8. The respondent TPWODL has submitted that rate of power purchased should be restricted only to the fuel cost. The cost towards Limestone, consumption of Raw Water, Ash Disposal charges, Plant Operation and Maintenance (variable) cannot be included in computation of variable charge as per the definition of variable cost/ energy charge in the PPA. Further, as per the approved PPA there is no compulsion for GRIDCO to purchase power from the IPP of M/s. NBVL. The variable charge/ ECR determined by the Commission will only be used by GRIDCO for deciding the merit order on day to day basis. It should not be construed that GRIDCO is committed to purchase power to the extent of 12% of ESO. The power from M/s. NBVL should be allowed for purchase by GRIDCO only if permitted in the merit order without any commitment in the form of minimum guaranteed off-take. Since, there is availability of green energy in the market with lesser price, the brown power from M/s. NBVL should also be competitive. As there are number of existing PPAs of GRIDCO with different thermal generators, requirement of this PPA may be reviewed by the Commission. The respondents TPSODL and TPNODL have submitted similar views as submitted by TPWODL.

9. The respondent SLDC has submitted that the petitioner has synchronized its 60 MW thermal power plant on 06.05.2021 after interval of about five years and is selling power through open access since 07.05.2021. They have no views on the matter of fixation of tariff for 60 MW IPP of M/s. NBVL.

10. The respondent-GRIDCO has submitted that as per the revised PPA dated 31.10.2014, the tariff for procurement of 12% of the ESO from 60 MW IPP of NBVL is only limited to Variable Cost/ Energy Charge Rate. The relevant clauses of the PPA dated 31.10.2014 are quoted below:

Clause No. 7.1.1 of ARTICLE – 7 : TARIFF, BILLING AND PAYMENT

"The Tariff for the Contracted Energy shall comprise only the Variable Cost/ Energy Charge Rate. The Variable Cost/ Energy Charge Rate shall be as determined by Odisha Electricity Regulatory Commission."

Clause No.1.1 of ARTICLE – 1 : DEFINITIONS AND INTERPRETATION

"Tariff" shall mean the Variable (Energy) Charge/ Cost; "Tariff Payment" shall mean the payments to be made by GRIDCO under Energy Bills and the relevant Supplementary Bills, basing on variable (energy) charges as per this Agreement;

'Variable/Energy Charge/Cost" shall mean the Primary and Secondary fuel cost which shall be payable by GRIDCO at the Energy Charge Rate for the total energy scheduled to be supplied during a calendar month. The energy charges payable during a month shall be; Energy charge rate in Rs/kWh x (Schedule energy for the month in kWh)"

"Energy Charge Rate" shall mean Energy Charge Rate (ECR) in Rupees per kWh in three decimal places and as shall be determined by OERC".

11. Further the Energy Charge Rate (ECR) is required to be computed as per the following prescribed formula of the Regulation 27(11) of OERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020.

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

12. GRIDCO submitted that, NBVL-IPP, in its petition in deviation from the terms and conditions of the PPA has claimed some other costs, which is not acceptable and the same need to be out rightly rejected. The petitioner needs to file a revised petition in line with the terms and conditions of the revised PPA dated 31.10.2014 and as per the relevant Regulations of the OERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020 for calculation of tariff, i.e. Energy Charge Rate only. In the ARR Order dated 21.03.2016 in Case No.54 of 2015 of GRIDCO for the year 2016-2017, the Commission has fixed the provisional tariff of ECR/ variable cost of 145.97 Paise/kWh in absence of the required data pertaining to 60 MW IPP Unit of the Petitioner. GRIDCO has submitted that since the information on one month's estimated billing is not available, opening of LC in the present facts and circumstances is not at all possible.

13. The Commission vide its interim order dated 02.11.2021 in the present case has observed that as there are some discrepancies in the numbers submitted by both

the petitioner and the respondent GRIDCO, there should a meeting between the parties in the office of the Commission in presence of Secretary, OERC by 10.11.2021 and therefore, Secretary, OERC was directed to fix the date and time of such meeting with due intimation to the petitioner, GRIDCO and TPCODL. Accordingly, Secretary, OERC had conducted a meeting on 10.11.2021 and after a detailed discussion/deliberation, the following decisions had been taken.

i. M/s. NBVL will write a letter to GRIDCO for withdrawal of its previous submissions with reference to the document on turbine & boiler and submit the copy of the instruction manual of turbine & boiler with Doc. No. N60-8.83-6 with a copy to the Commission through an affidavit

ii. GRIDCO after receiving such information may submit its views before the Commission on the next date of hearing.

14. Accordingly, the petitioner has submitted the required documents to GRIDCO vide its letters dated 18.11.2021 and 26.11.2021. Thereafter, GRIDCO has submitted its views on various parameters on computation of ECR by M/s. NBVL, as given bellow:

Consumption of Secondary Fuel Oil

15. The Petitioner has submitted to bill the expenses towards fuel oil consumed during the start-up of a boiler. GRIDCO is of the view that under no circumstances financial impact of any consumption of secondary fuel oil on GRIDCO should exceed the relevant provision for normative secondary fuel oil consumption in the OERC Generation Tariff Regulations, 2020.

Consumption of Limestone

16. GRIDCO has submitted that consumption of lime stone has been factored into by the Petitioner in the ECR calculation formula. This is not acceptable to GRIDCO in view of the provisions of PPA which envisages procurement of 12%/14% power at Energy Charge Rate, i.e. fuel cost only.

17. Further, Limestone is needed for Flue Gas Desulphurization (FGD) systems in thermal power plants and in CFBC lignite based power plant. However, as on date there is no information with GRIDCO regarding installation of FGD in NBVL's IPP power plant. Moreover, NBVL IPP unit is AFBC power plant and not a CFBC lignite

based power plant. The Petitioner has submitted CEA Report dated 20.02.2019 addressed to CERC regarding recommendation on operational norms for thermal generating stations in the context of new environmental emission control systems, which has no applicability for the IPP unit at present.

Auxiliary Energy Consumption

18. The Auxiliary Energy Consumption has been considered as 10% adopting the auxiliary consumption of 9.5% applicable to OPGC Stage-I Units, without any technical justification. This is not acceptable to GRIDCO, as OPGC Stage I has been allowed relaxed norms based on PPA dated 13.08.1996 as per the order dated 19.04.2017 of Hon'ble Supreme Court in C.A. No.3845 of 2017.Type of Boiler Feed Pump (BFP) i.e. whether it is electrically driven or Steam Driven has not been mentioned. NBVL is supposed to submit the technical details for any claim of normative Auxiliary Energy Consumption in line with Regulation 32(1)(e) of OERC Generation Tariff Regulations, 2020.

Gross Station Heat Rate

19. GRIDCO has submitted that Gross Station Heat Rate (SHR) of 2800 Kcal/ kWh as claimed by the petitioner is quite high as the petitioner's IPP Unit (60 MW) is a new Unit having advanced in built technology. The GSHR of a new 60 MW Unit ought not to be compared with very old Stage-I units of TTPS. Further, the claim of GSHR of 2800 Kcal/kWh by M/s. NBVL is not in line with the extant Generation Tariff Regulations, 2020 of the Commission. As per the OERC Generation Tariff Regulations, 2020, the GSHR of the 60 MW IPP Unit cannot be more than 2386.65 Kcal/kWh as explained below:

Regulation 32(1)(c), i.e. Norms of Operation pertaining to Gross Station Heat Rate, of the Chapter 5 of OERC Generation Tariff Regulation, 2020 is quoted below.

"Gross Station Heat Rate

(i) The Gross Station Heat Rate for all existing coal based thermal generating stations, except those covered under(ii) below is

200/210/250 MW Sets	***500 MW Sets (Sub-critical)***
2430 kCal/kWh	*2390 kCal/kWh*

Note1

In respect of 500 MW and above units where the boiler feed pumps are electrically operated, the gross station heat rate shall be 40 kCal/kWh lower than the gross station heat rate specified above.

Note2

For the generating stations having combination of 200/210/250 MW sets and 500 MW and above sets, the normative gross station heat rate shall be the weighted average gross station heat rate of the combinations.

(ii) The Gross Station Heat Rate for existing Thermal Generating Stations of OPGC (UNIT-I & II) Ltd will be as determined by the Commission from time to time

(iii) The Gross Station Heat Rate for all coal based thermal generating stations achieving COD on or after 01.04.2014, is to be calculated based on the following formula:

=1.05 X Design Heat Rate (kCal/kWh)

Where the Design Heat Rate of a 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*	*247*	*247*	*247*	*247*
SHT/RHT (^{0}C)	*535/535*	*537/537*	*537/565*	*565/593*	*565/593*	*565/593*	*565/593*
Type of BFP	*Electrical Driven*	*Turbine driven*	*Turbine Driven*	*Turbine driven*	*Turbine driven*	*Turbine driven*	*Turbine driven*
Max Turbine Cycle Heat rate (kCal/kWh)	*1955*	*1950*	*1935*	*1850*	*1850*	*1850*	*1850*
Min. Boiler Efficiency							
Sub-Bituminous Indian Coal	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.865*	*0.865*
Bituminous Imported Coal	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.895*	*0.895*
Max. Design Unit Heat Rate (kCal/kWh)							
Sub-Bituminous Indian Coal	*2273*	*2267*	*2250*	*2222*	*2151*	*2105*	*2081*
Bituminous Imported Coal	*2197*	*2191*	*2174*	*2135*	*2078*	*2034*	*2022*

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate 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 unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency;

Provided also that if one or more units were declared under commercial operation prior to 01.04.2020, the heat rate norms for those units as well as units declared under commercial operation on or after 01.04.2020 shall be lowest of the heat rate norms considered by the Commission during tariff period 2014-20 or those arrived at by above methodology or the norms as per the sub-clause 32(1)(c)(i).

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

20. GRIDCO has stated that Regulations 32(1)(c)(iii) is applicable for the Gross Station Heat Rate for all coal based thermal generating stations achieving COD on or after 01.04.2014. As the NBVL IPP Unit has achieved the COD on 30.11.2015, i.e. after 01.04.2014, the Regulation 32(1)(c)(iii) is squarely applicable for calculation of Gross Station Heat Rate of the unit and not the Regulations 32(1)(c)(i) and 32(1)(c)(ii). Accordingly, GRIDCO has made the following submissions;

a) NBVL claimed guaranteed Heat Rate of the Turbine cycle as 2277.31 Kcal/kWh, Design Heat Rate of the unit as 2679.19 Kcal/kWh and Gross Station Heat Rate of 2800 Kcal/kWh with turbine Super heater Temperature of 535 ^{0}C and Pressure Rating of 93 kg/cm^2 and Boiler Efficiency of 85%.

b) As per the 1st proviso of the Regulation 32(1)(c)(iii) the design unit heat rates (kCal/kWh) shall not exceed the maximum design unit heat rates mentioned in the table depending upon the pressure and temperature ratings of the units. The table contains the pressure ratings, corresponding to wide range of MW capacities including units of more than 500 MW capacity.

c) As per the 2nd Proviso of the Regulation 32(1)(c)(iii), in case pressure and temperature parameters of a unit are different from the ratings of the above table, the maximum design unit heat rate of the nearest class shall be taken into consideration.

d) Due to non-availability of maximum design unit heat rates corresponding to

pressure rating for 93 kg/cm^2 in the above table, in line with the above 2nd provision of the Regulation 32(1)(c)(iii), Max design unit heat rates of nearest class of 150 kg/cm^2, i.e. 2273 Kcal/kWh, applicable for Electrical Driven BFP, Min. Boiler Efficiency of 86% and for Sub-Bituminous Indian Coal, need to be considered.

Therefore, the Gross Station Heat Rate (SHR) as per the above regulation = 1.05 X Design Heat Rate (kCal/kWh)

= 1.05 X 2273 Kcal/kWh

= 2386.65 Kcal/kWh

e) GRIDCO submitted that the SHR claimed by NBVL, i.e. 2800 Kcal/kWh, is 413.35 Kcal/kWh more than the above value. Therefore it should be limited to 2386.65 Kcal/kWh as per the OERC Generation Tariff Regulations, 2020.

21. GRIDCO submitted that the table given in OERC Generation Tariff Regulations, 2020 is a generic table applicable for most types of turbine and boiler including more than 500 MW units. SHT/RHT (^{0}C) indicates SHT or RHT and not SHT and RHT as claimed by the Petitioner. Therefore, the table is applicable for thermal unit with re-heater and also without re-heater. Normally, sufficient cushion is provided to fix the maximum limit by considering all possible factors and for all types of units. GRIDCO submitted that on the basis of the table provided in the Regulation, it is observed that for a pressure variation of 93 kg/cm^2 variation in the Turbine Cycle Heat Rate is only 105 Kcal/kWh. Therefore, claim of NBVL for extra 413 Kcal/kWh for a variation of only 57 kg/cm^2 is abnormal and thus not at all acceptable.

22. GRIDCO has further submitted that the petitioner claimed that only the 3rd proviso of the subject Regulation is applicable for SHR. As per the Petitioner the heat rate of the IPP unit has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency. GRIDCO stated that the above contention of the petitioner on the basis of wrong interpretation of the 3rd proviso of the Regulation 32(1)(c)(iii), is not at all acceptable to GRIDCO, considering the fact that the Turbine Cycle Heat Rate and Boiler Efficiency are always calculated separately and then integrated to compute the unit heat rate irrespective of different suppliers or same supplier. Therefore, to evade the limitation of the first proviso of the above Regulation, the Generator would always try to submit documents for guaranteed turbine cycle heat rate and boiler efficiency separately, in

both the cases of different suppliers or same supplier. In that situation the first proviso would not be applicable due to such manipulation. The Petitioner is completely misinterpreting the Regulation in its favour to avail undue advantage. The 3rd proviso of the Regulation 32(1)(c)(iii) is well within the limitation domain of the first proviso of the Regulation 32(1)(c)(iii) and the Design Heat Rate more than 2386.65 Kcal /kW should not be allowed.

Procurement & Quality of Coal and Usage of Linkage Coal for Supply of 12% of Energy Sent Out to GRIDCO

23. Supporting documents submitted by M/s. NBVL, in respect of coal quality test and procurement, do not pertain to same period i.e. Test reports are of 2019 whereas coal procurement invoices are of 2021. Moreover, Certificate of the Charted Accountant doesn't specify whether the verified original bills and invoices are pertaining to the IPP unit. Further, the Spot E-auction coal is not meant for IPP Units.

24. Landed cost of coal has been wrongly grossed up by applicable Transit loss of 0.8 %. The appropriate method of considering transit loss is on the total quantity of coal purchased and not on landed cost of coal.

25. In absence of the actual "As Received" GCV of coal and Third Party Sampling Report, the lower limit of range of GCV of coal has been considered to derive the weighted average GCV of coal, which is not acceptable to GRIDCO. In this case median value of the range of GCV of coal has to be taken.

26. GRIDCO has submitted that, the Petitioner NBVL has scope for availing concessional coal under various phases of SHAKTI Policy of Ministry of Coal, Government of India and can also use concessional Coal from MCL for the State share of power. But, till date the Petitioner has not placed any document in support of the steps taken for availing such coal for supply of 12% of energy sent out from its IPP to the State/ GRIDCO. As per the clause 3.1.1.(ix) of the PPA

***"3.1.1(ix)** Coal shall be arranged or procured by NBVL-IPP .There will not be any obligation on the part of Government of Odisha or GRIDCO to make arrangement for coal linkage for the above project."*

Therefore, for supply of State share of power the ECR payable by GRIDCO should be determined considering the linkage coal or coal commercially cheaper than the linkage coal both rate and quality i.e. GCV wise.

27. GRIDCO submitted that, the first proviso of Regulation 28(11) of OERC Generation Tariff Regulations, 2020 stipulates as follows:

"Provided that generating company shall provide to the beneficiaries of the generating station the details of parameters of GCV and price of fuel i.e. domestic coal, imported coal, e-auction coal etc. as per the Format prescribed by the Commission."

Further, as per Regulation 24(2) following provision for submission of data pertaining to primary and secondary fuel have been stipulated:

"The cost of fuel in cases covered under sub-regulation (1) of Regulation 24 shall be based on the landed fuel cost incurred (taking into account normative transit and handling losses) by the generating company and gross calorific value of the fuel as per actual weighted average for the third quarter preceding financial year in case of each financial year for which tariff is to be determined and no fuel price escalation shall be provided during the tariff period.

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) and gross calorific value of the fuel as per actual weighted average for three (3) months, as used for infirm power, preceding date of commercial operation for which tariff is to be determined."

28. All generators (State and Central) shall abide by such stipulations and submit the monthly coal and oil data in the said formats to GRIDCO every month. The Petitioner therefore should collect the formats from office of the Commission, if it is not available in the website but cannot deny its submission of coal data for preceding three months for determination of "indicative ECR" by the Commission. GRIDCO in its filing has annexed formats for submission of coal and oil data, as submitted by other generators like Vedanta, GKEL etc. to GRIDCO every month along with the monthly energy bills. The Petitioner NBVL is reluctant to submit coal data in said formats, thereby creating unnecessary chaos and doubts. NBVL needs to file monthly coal and oil data in the said formats for the period September, October and November, 2021 before the Commission for determination of indicative ECR.

29. On conjoint reading of PPA provision and OERC Generation Tariff Regulation, 2020, it is evident that ECR shall constitute fuel cost only, as claimed by other State generators like OPGC, IPPs like Vedanta and GKEL and Central Generating Stations. As per the said formula, the GCV and landed price of coal and fuel oil is to be considered only for determining the ECR. As regards, limestone, it does not come under fuel category as provided in the PPA.

30. GRIDCO has submitted that, they have made a tentative ECR calculation of Rs.1.67 Paise/kWh with certain assumptions in absence of relevant supporting documents, which may be considered after prudent verification by the Commission. The tentative calculation of ECR as per GRIDCO are as follows:

TENTATIVE ENERGY CHARGE RATE (ECR) CALCULATION

Description	**Units**	**As per NBVL Submission Dated 16.08.2021**	**As per GRIDCO**	
		Values	**Values**	**Remark**
Station Heat Rate	kCal/kWh	2800	**2386.65**	Heat rate for electrically driven Boiler Feed Pump (Regulation 32 (c)(iii))
Auxiliary Energy Consumption	%	10	**8.5**	As per Regulation 32 (e) (i)
Quantity of Coal purchased	MT	85,000	30,000	Forward E-auction & Linkage auction coal provisionally considered
Total cost of coal claimed by MCL	Rs.	15,61,80,015	4,99,32,157	
Average cost of coal	Rs./MT	1,837.41	1,664.41	
Total Quantity of coal transported	MT	12,092.51	12,092.51	As mentioned in invoices.
Net Quantity Supplied after transit loss of 0.8%	MT		11,995.77	Transit Loss for Non-Pit head Station
Total Transportation cost	Rs.	63,60,935.00	63,60,936.00	IPP unit has not been mentioned in the invoices. The transportation cost is abnormally high and is not acceptable to GRIDCO.
Average cost of transportation	Rs. /MT	526.02	530.26	
Total Quantity unloaded	MT	37,889.75	37,889.75	Coal unloaded in respect of IPP Unit
Total Unloading cost	Rs.	6,19,792.00	6,19,792.00	
Average cost of unloading	Rs./MT	16.36	16.36	
Dozing charges per hour	Rs./Hr	1,601		Such expenditures are part of O & M expenses which
Quantity dozed per hour	MT/Hr	55		

Description	Units	As per NBVL Submission Dated 16.08.2021	As per GRIDCO	
Dozing charges per MT	Rs./MT	29.11		is a component of Fixed charges and hence not considered
Dozing charges per MT for stacking and feeding	Rs. /MT	58.22		
Total average Landed cost of coal	Rs. /MT	2,438.01	2,211.03	
Normative Transit Loss (Non-Pit Head)	%	0.80%		Transit Loss % wrongly taken on Landed Price of coal by NBVL.
Total unit cost of coal	Rs. /MT	2,457.67	**2,211.03**	
Average GCV of Coal		3418.65	3650.5	Weighted average mid GCV of Linkage and Forward E-auction coal
Total Moisture (%)		11.861	11.861	Data pertains to June, 2019.
Inherent Moisture (%)		6.689	6.689	
GCV "As Received"		3229.16	**3448.16**	As per regulation 3(ff)
GCV "As Fired"		3156.9		Not Applicable
Normative Limestone Consumption	kg/kWh	0.025		Not applicable because Lime stone is not a fuel for generation of electricity and NBVL IPP unit is not a CFBC lignite based Boiler. No information on FGD installation by NBVL.
Landed Price of Lime Stone	Rs. /MT	3465		
Energy Charge Rate (ECR)	Rs. /kWh	**2.518**	**1.672**	Provisional

Note: *1) The aforesaid calculation is subject to prudent verification by the Commission.*

2) The Transportation Cost appears to be high and abnormal and not supported by authentic documents.

3) The landed price of FSA Linkage Coal/ commercially cheaper coal may be considered and the transportation cost may be verified prudently for deriving indicative ECR.

31. GRIDCO has submitted that it agrees with the views of the DISCOMs that the rate determined by the Commission will only be used by GRIDCO for deciding the merit order on a day to day basis and it should not be construed that GRIDCO is committed to purchase of power to the extent of 12% of the total power sold by NBVL. Further, the power from NBVL plant should be allowed for purchase by GRIDCO only if permitted in Merit Order without any commitment in the form of Minimum Guaranteed off take or any take or pay commitment from GRIDCO. However, there are important provisions in the PPA regarding sale of power to third parties and sharing of sale realisation excess of Energy Charges.

"3.2.3 If GRIDCO does not avail of the Contracted Energy provided by NBVL-IPP for any reason, whatsoever, NBVL-IPP shall be entitled to sell such Contracted Energy not taken by GRIDCO, to any other person. For any such Third party sale, all open access charges including losses as may be applicable shall not be payable by GRIDCO.NBVL –IPP shall maintain accounts and provide all details regarding price of sale etc to GRIDCO in respect of such sales under this Article.

3.2.4 In the case referred in Article 3.2.3, the sale realisation is in excess of Energy Charges shall be equally shared by NBVL-IPP and GRIDCO along with the charges like transmission charges, Open Access Charges and other statutory charges as applicable."

32. GRIDCO stated that in view of the above provisions in the PPA, determination of ECR of IPP power of NBVL is to be done prudently considering the fuel cost only. Therefore GRIDCO has prayed that all extraneous charges loaded in ECR of Rs.2.52/kWh as claimed by NBVL may not be allowed by the Commission.

33. Further, GRIDCO has sought necessary direction by the Commission on the following two issues:

a) <u>Accounting of under–injection from Open Access Schedule</u>:

GRIDCO has submitted that M/s. NBVL is availing Open Access for sale of balance power from their IPP Unit to third parties (Power Exchanges etc). As a consequence, there are chances/occasions of over injection and under injection in any 15 minutes time block. Therefore, vide its letter dated 28.05.2021 GRIDCO had intimated the Petitioner as follows:

"GRIDCO is not liable to bear cost of any kind of inadvertent injection to the system. The under-injection issue if arises due to Open Access Transactions needs to be treated like NBVL-CGP in absence of intra-State ABT."

In this regard, NBVL has not raised any dispute till date and GRIDCO had raised

invoices for the month of May, 2021 and June, 2021 following the commercial modalities as adopted for NBVL-CGP i.e.

"In case of availing power from GRIDCO's pool to meet Open Access schedule, the same shall be paid at average BSP rate for respective financial year plus Rs.1.00 or deviation charges including additional deviation charges as per CERC norms plus Rs.1.00, whichever is higher for that block period to GRIDCO."

b) Contribution to Environment Management Fund:

GRIDCO has further submitted that as per Clause 3.1.2 (i),
"*An annual contribution @ 6 Paise per Unit of energy sent out from the thermal power plant has to be made by the NBVL-IPP during the relevant financial years towards the Environment Management Fund Trust. This contribution will not be made for the energy sold in the State of Odisha."*

34. GRIDCO has requested that the Commission to consider the above issues and give necessary direction to address under-injection of power by M/s. NBVL while availing Open Access from the IPP Unit and payment of contribution to OEMF Fund by the Petitioner.

35. In view of the above submissions, GRIDCO has prayed the Commission to:

a) Allow GSHR not more than 2386.65 Kcal/kWh in respect of 60 MW IPP Unit of NBVL as per the OERC Generation Tariff Regulations, 2020.

b) Direct NBVL to submit the Auditor certified coal and oil data for at least preceding three months for determination of indicative ECR by the Commission.

c) Direct NBVL to take action for getting Linkage Coal/concessional coal for supply of state share of power to GRIDCO.

d) Stipulate principle for addressing under injection from Open Access Schedule.

e) Direct NBVL to make payment of contribution @ 6Paise /kWh to OEMF Fund of Government of Odisha in respect of power sold outside the State.

f) Prudent determination of ECR based on linkage / commercially cheaper coal in respect of power to be supplied to GRIDCO by NBVL from its 60 MW IPP Unit as per PPA, considering the fuel cost only and thus all extraneous charges and claimed by NBVL in ECR may not be allowed by the Commission.

36. In its rejoinders, the petitioner M/s. NBVL has responded to the objections on different issues as raised by the respondents, which are summarised here under:

Procurement and Quality of Coal

37. Replying on the observation of GRIDCO that the Supporting documents, in respect of coal quality test and procurement, do not pertain to the same period i.e. coal Test reports are of the year 2019 whereas coal procurement invoices are of the 2021. The petitioner has submitted that since third party analysis of samples has not been carried out after 2019, the available document was submitted for the similar grade of coal.

38. Regarding supply of Coal and Oil data in respect of IPP unit in the formats prescribed as per OERC Generation Tariff Regulations, 2020, NBVL submits that the said formats pertain to stock balances of a generating plant, these are not relevant in this Case.

39. NBVL submits that the invoices and Chartered Accountant certificate submitted by it are related to IPP only. Further, both the IPP and CGP and traders are also eligible to procure coal under spot e-auction.

40. NBVL submits that the Sales Order of MCL are pertaining to the IPP only. The MCL Sales Orders dated 26.04.2021 and 17.06.2021 clearly mentioned that the type of consumer is "power", which obviously refers to IPP only. Further, the Short Term Coal Linkage Scheme, Shakti and Special Forward e-auction are meant for IPPs only.

    NBVL declares and certifies that the documents and expenditure claimed for Transportation Cost and coal unloading charges are meant for IPP Unit only.

41. NBVL submits that for all the cost related to a unit of coal delivered at the mine end, only 0.992 units of coal are received at the plant end. Therefore, the cost per unit of coal at the mine end is correctly grossed up and transit loss of 0.8% has been considered.

42. Replying on the observation of GRIDCO that in absence of the Actual "As received GCV of Coal and Third Party sampling report, the median value of the range of GCV of coal has to be taken, the petitioner submits that they do not agree with the above submission of GRIDCO. Even though the coal from a mine has been given a Grade with a GCV range, the actual value is many a times lower than the minimum of the Grade on account of the following:

- The coal seams also contain apart from coal, shale and dirt bands with stone etc. For determination of the Grade of coal in a mine, the shale and dirt bands are normally removed and GCV of the coal alone is determined.
- The coal mined from the mines consists of coal, shale and dirt bands, which is supplied to the customer after crushing. Therefore the actual GCV of the coal supplied to the customer is 10-15% lower than the declared Grade.
- NBVL is taking action for third party sampling and accordingly the GCV of the coal supplied shall be determined based on the analysis of the samples.

43. Regarding availing concessional coal under various phases of Shakti policy, NBVL submits that IPPs are not entitled to long term coal linkage under Shakti or any other scheme unless they have a long term PPA with a Distribution Company. There is no provision to extend long term coal linkage to IPPs having PPA with a DISCOM for a very minimal quantity. However, as per the Shakti B-III Scheme, IPPs who do not have coal linkages are eligible to participate and procure coal through e-auction and execute FSA for a period of three months, for sale of power under short term market and power exchanges. NBVL IPP is availing a part quantity of coal under this scheme.

Consumption of Secondary fuel oil

44. NBVL submits that the cost towards fuel oil consumption as and when required during a calendar month, will be limited to the provision in Clause 32 (1) (d) (ii) specifying Secondary fuel oil consumption of 0.50 ml/kWh, based on the gross generation for the month.

Consumption of Limestone

45. NBVL submits that Clause 27 (11) of the OERC Generation Tariff Regulations, 2020, stipulates the formula for determination of Energy Charge Rate for coal fired stations. The normative limestone consumption in kg / kWh and weighted average landed price of limestone is included in the formula as “LC” and “LPL”. Further, the Commission in Clause 27 (18) relating to Landed Cost of Reagent have stipulated that the cost of limestone etc. used during operation of emission control systems for meeting revised emission standards shall be determined based on normative consumption, purchase price of the reagent through competitive bidding, applicable statutory charges and

transportation cost. It has been further stipulated that normative consumption of specific reagents (limestone in this case) shall be notified separately.

46. NBVL submits that, the CEA has determined the limestone consumption for flue gas desulphurization based on the Notification of the MoEF&CC dated 07.12.2015 which provides that, thermal power stations are required to provide systems for control of SO_2 emission, which is fixed as 100 mg / Nm3 for Units installed from 01.01.2017. NBVL has installed pneumatic lime dozing system for dozing limestone to the boiler along with fuel, namely coal to neutralise the Sulphur in the fuel. In the absence of specified norms by OERC, the consumption of limestone has been calculated based on the formula at Item A-4 of CEA norms, as for both AFBC and CFBC power plants the limestone is directly injected to the furnace along with the primary fuel namely coal. NBVL is actually using limestone for control of SO_2 emission and the normative requirement as per the CEA Circular and the actual landed cost of limestone have been utilized, in the formula prescribed by the Commission for determination of ECR in the Generation Tariff Regulations, 2020.

Auxiliary power consumption

47. Regulation 32 (1) (e) (ii) of the OERC Generation Tariff Regulations, 2020 provides that the Auxiliary Energy Consumption for the unit capacity of less than 200 MW sets shall be dealt on case to case basis. NBVL submits that the auxiliary energy consumption for smaller size units shall be higher. The auxiliary energy consumption of its 60 MW AFBC non-reheat unit is much higher. The actual auxiliary energy consumption for the IPP is 14.28% during June, 2021 and 11.63% during July, 2021, which have been submitted to the Engineer-in-Chief (Electricity)-cum-Principal Chief Electrical Inspector. NBVL submits that the Commission should allow the actual auxiliary consumption for a particular month for determination of ECR for that month.

Gross Station Heat Rate

48. NBVL submits that Original Manufacturer and supplier of the Turbine is “Nanjing Turbine and Electric Machinery (Group) Co. Ltd”, China and it was purchased through M/s. Aries Power System (I) Pvt. Ltd. The name of the Manufacturer is clearly mentioned in the Manual. However, the efficiency of the boiler was not mentioned in the Manual of the Manufacturer. Therefore, the data was supplied

subsequently by the Manufacturer and is a valid document. The soft copy of the Boiler Manual along with the Supplier certified Boiler Efficiency data sheets have been furnished to GRIDCO.

49. NBVL submits that the objection of GRIDCO is totally irrelevant as the gross station heat rate for 200 MW size unit having main steam pressure of 150 kg/cm^2 with re-heat arrangement cannot be applied to a 60 MW AFBC boiler with main steam pressure of 90 kg/cm^2. The station heat rate has been calculated by the petitioner based on the OERC Generation Tariff Regulations, 2020 and is therefore applicable in case of its 60 MW IPP unit.

50. NBVL submits that the ECR for its 60 MW IPP, at which GRIDCO has to make payment for 12% power has been calculated based on the norms provided in the Generation Tariff Regulations of the Commission and cannot be compared with any other generating stations having units of much bigger size.

51. NBVL submits that power is being sourced by GRIDCO as per the PPA dated 31.10.2014. There is no provision in the PPA for GRIDCO to source the Contracted Energy on a day to day basis on Merit Order. In fact, energy from none of the Generating Stations, having PPA is sourced by GRIDCO on a day to day basis. The PPA provides that power shall be sourced for an initial period of twenty five years. However, Articles 3.2.3 and 3.2.5 of PPA provide that a notice has to be issued by GRIDCO to NBVL-IPP indicating its unwillingness to purchase the Contracted Energy or part thereof for a period specified in such notice. This does not authorize GRIDCO to schedule power on day to day basis on Merit Order. The Commission may direct that at least 15 days notice be issued by GRIDCO in case it does not want to purchase the Contracted Energy or part thereof under Articles 3.2.3 and 3.2.5 of the PPA and the period for which GRIDCO does not want to purchase the Contracted Energy should be at least 3 months. This will enable NBVL–IPP to sell such energy to third party.

52. NBVL further submits that GRIDCO in its letter No. 480 dated 28.05.2021 has intimated the petitioner that ECR determined by OERC shall be effective prospectively, i.e. from the date of issue of the Order. The above submission of GRIDCO is in clear violation of Article 7.1.4 of the PPA dated 31.10.2014. Non-drawal of state share of power by GRIDCO from the 60 MW IPP is solely on account of GRIDCO. The Merit Order for drawal of power from any generating station is

determined by the Commission while passing the ARR and BSP Order for a financial year. There is no provision for scheduling of power by GRIDCO on a day to day basis based on Merit Order.

53. On the issue of accounting of under–injection from Open Access Schedule as raised by GRIDCO, NBVL submits that the billing by GRIDCO towards deviation from schedule at the rate of average BSP plus Rs.1.00 is not applicable in its case. Regulation 30 of the OERC Generation Tariff Regulations, 2020 reads as follows:

"30 (1):Variations between actual net injection and scheduled net injection for the generating stations and variations between actual net drawal and scheduled net drawal for the beneficiaries shall be treated as their respective deviations and charges for such deviations shall be governed by Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related matters) Regulations, 2014, as amended from time to time or any subsequent Deviations Settlement Regulations issued by the Commission."

Since the 60 MW IPP of NBVL is a generating station and not a CGP, the provision in Regulation 30 (1) quoted above shall be applicable. In fact NBVL vide its letter dated 27.08.2021 has calculated and paid the DSM charges for the months of May and June, 2021, based on the CERC Regulations. Therefore, the submission of GRIDCO is liable to be rejected.

54. On the issue of contribution to Environment Management Fund, NBVL submits that it shall be made as per the terms in the PPA.

55. NBVL submits that the DISCOMs have made submissions regarding drawal of the 12% Contracted Energy on a day to day basis, based on Merit Order, which is not relevant as stated in earlier paragraphs.

56. In view of the above, the Petitioner has prayed the Commission to approve the ECR of Rs.2.517 / kWh for power supply to GRIDCO and allow reimbursement of fuel oil consumption as and when required during the month, subject to overall limit of 0.5 ml / kWh for the month.

57. Heard the parties at length and their written notes of submission are taken into record. As per the decisions taken in the meeting on 10.11.2021 at OERC in presence of the Director (RA) of OERC, M/s. NBVL provided the required information/documents and thereafter GRIDCO has submitted its views thereon. The Commission observed that OERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2020, has been notified and published in the Odisha Gazette on 26th

August 2020. Hence, the principles laid down in the said Regulations shall be adopted for determination of variable cost/ECR of the subject IPP of M/s NBVL.

Determination of Plant Availability:

58. The Normative Annual Plant Availability Factor (NAPAF) at 85% as per Regulation 5.3(a) (i) of OERC Tariff Regulations, 2020 shall be considered for computation of gross generation for determination of Coal requirement.

Auxiliary Energy Consumption:

59. GRIDCO has considered auxiliary energy consumption of 8.5% which is applicable for 200 MW series generating unit capacity as per OERC Tariff Regulations, 2020. M/s. NBVL has considered auxiliary consumption @ 10% saying that the auxiliary consumption is being considered by the Commission at 9.5% for 210 MW series generating capacity of OPGC Stage I and it is much higher for its 60 MW generating unit capacity. Commission observed that CERC in its Generation Tariff Regulations, 2019 has fixed the normative auxiliary consumption of 10.50% for TTPS for 60 MW generating unit capacity. Therefore, Commission thinks it proper to consider auxiliary energy consumption @ 10% for the newly commissioned 60 MW IPP of M/s. NBVL. Therefore, the Commission approves the auxiliary energy consumption @ 10% for the subject 60 MW IPP of M/s. NBVL.

Gross Station Heat Rate

60. The Regulation 32(1)(c)(iii) of OERC Tariff Regulations, 2020 states as follows.

"(c) Gross Station Heat Rate

(i) xxxxxxxxx

(ii) xxxxxxxxx

(iii) The Gross Station Heat Rate for all coal based thermal generating stations achieving COD on or after 01.04.2014, is to be calculated based on the following formula:

=1.05XDesign Heat Rate (kCal/kWh)

Where the Design Heat Rate of a 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*	*247*	*247*	*247*	*247*
SHT/RHT(^{0}C)	*535/535*	*537/537*	*537/565*	*565/593*	*565/593*	*565/593*	*565/593*
Type of BFP	*Electrical Driven*	*Turbine driven*	*Turbine driven*	*Turbine driven*	*Turbine driven*	*Turbine driven*	*Turbine driven*
Max Turbine Cycle Heat rate (kCal/kWh)	*1955*	*1950*	*1935*	*1850*	*1850*	*1850*	*1850*
Min. Boiler Efficiency							
Sub-Bituminous Indian Coal	*0.86*	*0.86*	*0.86*	*0.86*	*0.86*	*0.865*	*0.865*
Bituminous Imported Coal	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.895*	*0.895*
Max Design Unit Heat rate(kCal/kWh)							
Sub-Bituminous Indian Coal	*2273*	*2267*	*2250*	*2222*	*2151*	*2105*	*2081*
Bituminous Imported Coal	*2197*	*2191*	*2174*	*2135*	*2078*	*2034*	*2022*

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate 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 unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency;

Provided also that if one or more units were declared under commercial operation prior to 01.04.2020, the heat rate norms for those units as well as units declared under commercial operation on or after 01.04.2020 shall be lowest of the heat rate norms considered by the Commission during tariff period 2014-20 or those arrived at by above methodology or the norms as per the sub-clause32(1)(c)(i).

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

61. It is observed that OERC Tariff Regulations, 2020 does not specify the gross station heat rate for the generating station having unit capacity of less than 200 MW series. Therefore, the petitioner has considered the guaranteed heat rate of the turbine cycle as 9528.6 KJ/kWh (2277.31 K.cal/kWh) as per the O & M Manual of M/s. ARIES

Power System (I) Pvt. Ltd. and considered the guaranteed efficiency of boiler as 85% with F grade coal (3000 GCV) as per O & M Manual of M/s. THERMAX Babcock & Wilcox. The petitioner has computed the Station Heat Rate = 2277.31 ÷ 0.85 = 2679.19 K.cal/kWh and Gross Station Heat Rate = 1.045 x 2679.19 = 2799.75 or Say 2800 K.cal/kWh. However, GRIDCO is of the view that due to non-availability of maximum design unit heat rates corresponding to pressure rating for 93 kg/cm^2 in the above table, in line with the above 2nd provision of the Regulation 32(1)(c)(iii), Max design unit heat rates of nearest class of 150 kg/cm^2, i.e. 2273 Kcal/kWh, is applicable for Electrical Driven BFP, Min. Boiler Efficiency of 86% and for Sub-Bituminous Indian Coal, need to be considered. Accordingly, as per the formula given in the above regulation, GRIDCO has computed the Gross Station Heat Rate (GSHR) = 1.05 X Design Heat Rate = 1.05X 2273 Kcal/kWh = 2386.65 Kcal/kWh.

62. The Commission observed that CERC in its Generation Tariff Regulation, 2019 at Note 4 of Regulation 49(C)(a)(i) has stated that the Gross Station Heat Rate for unit capacity of less than 200 MW sets, shall be dealt in case to case basis. Accordingly, CERC has fixed the Gross Station Heat Rate of 2830 Kcal/kWh for Talcher Thermal Power Station of NTPC. Therefore, the Commission thinks it prudent to consider the Gross Station Heat Rate at 2800 kCal/kWh for the 60 MW IPP of M/s.NBVL as proposed by the petitioner.

Specific Secondary Fuel Oil Consumption

63. M/s NBVL submitted that the cost of secondary fuel oil has been considered at 0.50 ml/Kwh in line with Regulation 32(1)(d)(ii) of OERC Tariff Regulations, 2020. The Commission approves the Specific Secondary Fuel Oil Consumption as 0.50 ml/Kwh for the subject 60 MW IPP of M/s. NBVL.

64. Regarding consumption of limestone the parties shall be guided by the OERC Generation Tariff Regulation, 2020. If the Petitioner is using lime stone as stated in its submission, the same should be considered while computing the energy charge rate.

Energy /Variable Charge

65. The energy charge is to be calculated and billed by the generator on month to month basis as per Regulations 27(8), (9) & (10) of the OERC generation Tariff Regulations, 2020. Regulation 27(10) & (11) of the OERC Generation Tariff Regulations, 2020 provides that the Energy Charge Rate (ECR) in Rupees per kWh on ex-power plant

basis shall be determined to three decimal places in accordance with the formulae as under:

(11) For coal based fired stations

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

Where,

AUX = Normative auxiliary energy consumption in percentage;

*CVPF= Weighted Average Gross calorific value of coal "**as received"** in kCal per kg for coal based stations;*

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 price of limestone in Rupees per kg;

SFC = Normative Specific fuel oil consumption in ml per kWh;

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

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

Provided that generating company shall provide to the beneficiaries of the generating station the details of parameters of GCV and price of fuel i.e. domestic coal, imported coal, e-auction coal, etc., as per the Format prescribed by the Commission.

Provided further that the details of blending ratio of the imported coal with domestic coal, proportion of e-auction coal and the weighted average GCV of the fuels as received shall also be provided separately, along with the bills of the respective month:

Provided further that copies of the bills and details of parameters of GCV and price of fuel i.e. domestic coal, imported coal, e-auction coal, etc., details of blending ratio of the imported coal with domestic coal, proportion of e-auction coa l shall also be displayed on the website of the generating company.

66. Considering the above provisions of the OERC Generation Tariff Regulations,2020, the Commission directed that the petitioner-M/s. NBVL would furnish the information/ data to GRIDCO as regards to details of coal and oil with break-up as stated in the Regulations. From the submission of M/s. NBVL it is understood that they are using e-auction/ imported coal for operation of its power station. GRIDCO has to verify the details of coal purchased and consumed as well as GCV of the same. However, as an illustration the Commission has calculated the energy charge rate as under basing on the weighted average price & GCV of both Coal and fuel oil as considered by GRIDCO in its submission.

Parameters	**Unit**	**Submitted by NBVL**	**Submitted by GRIDCO**	**Calculated by the Commission**
Auxiliary Energy Consumption	%	10.00	8.50	10.00 (As per OERC NBVL submission)
Station Heat Rate	Kcal/kwh	2800.00	2386.65	2800.00 (As per OERC NBVL submission)
GCV of Coal	Kcal/Kg	3156.90	3448.16	3448.16 (As submitted by GRIDCO)*
Coal Price	Rs/Mt	2457.29	2211.03	2211.03*
Lime Stone price	Rs/Mt	3465.00	0	3465.00*
Sp. Lime Consumption	Kg/Kwh	0.025	0	0.025
Sp. Oil Consumption	ml/Kwh	0.50	0.50	0.50
Energy Charge rate (ECR) P/U	**Paise/kwh**	**251.79**	**167.25**	**209.11**

* To be verified and ascertained by GRIDCO before payment.

67. The above computation of ECR is only for the purpose of illustration. The billing of ECR shall be made by M/s. NBVL and submitted to GRIDCO on monthly basis with the details of coal/oil used for generation as per the OERC Generation Tariff Regulation, 2020 and the parameters decided by the Commission in the present order. GRIDCO shall verify GCV and price of coal and oil etc. before making actual payment as per Regulations.

68. However, the Commission is of the view that the entire share of State from the subject IPP should be drawn by GRIDCO. Further, the Commission is of the view that domestic coal should be utilized for generation of power for State use to avoid tariff burden on the State consumers. Therefore, the Commission directes both GRIDCO and the petitioner to discuss the matter at appropriate level to obtain domestic coal

under different policies of the Central/State Govt. towards state share of power from the subject 60 MW IPP of M/s. NBVL.

69. Other issues raised by both the petitioner and GRIDCO in the present case are extraneous to computation of energy charge rate/variable cost of the subject IPP towards supply of state share of power to GRIDCO. Regarding the issue of over injection and under injection the Commission advises GRIDCO to come with a separate petition when such case arises. Regarding the issue of contribution to environment management fund the petitioner has agreed to pay the same as per the terms of PPA.

70. With the above observations and directions, the case is disposed of.

Sd/-
(G. Mohapatra)
Member

Sd/-
(U. N. Behera)
Chairperson