No.: N/52/15

BEFORE THE KARNATAKA ELECTRICITY REGULATORY COMMISSION, BENGALURU

Dated : 9th November, 2017

Present:

Shri M.K. Shankaralinge Gowda	..	Chairman
Shri H.D. Arun Kumar	..	Member
Shri D.B. Manival Raju	..	Member

OP No.26/2015

BETWEEN :

Sunvik Steels Pvt. Ltd.,
No.23, 3rd Floor, Bahubali Nagar, MES Road,
Jalahalli village, Yeshwanthpur,
Bengaluru – 560 022 .. **PETITIONER**

[Represented by Smt. Poonam Patil, Advocate]

AND:

1) Karnataka Power Transmission Corporation Limited,
Cauveri Bhavan, K.G. Road,
Bengaluru – 560 001

2) Bangalore Electricity Supply Company Limited,
K.R. Circle,
Bengaluru – 560 001.

3) Mangalore Electricity Supply Company Limited,
MESCOM Bhavana,
Kavoor Cross Road, Bejai,
Mangaluru – 575 004.

4) Chamundershwari Electricity Supply Corporation Limited,
No.29, Kaveri Grameena Bank Road,
Vijayanagar, 2nd Stage,
Mysuru – 570 019.

5) Hubli Electricity Supply Company Limited,
P.B. Road, Navanagar,
Hubballi – 580 025.

6) Gulbarga Electricity Supply Company Limited,
Station Road,
Kalaburagi – 585 101.

7) The State of Karnataka,
Represented by Additional Chief Secretary to Govt.,
Energy Department,
Vikasa Soudha,
Bengaluru – 560 001 .. **RESPONDENTS**

[Respondents 1 to 5 and 7 represented by Thiru & Thiru, Advocates and Respondent 6 represented by Indus Law, Advocates]

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<u>ORDERS</u>

1) The Petitioner, which has established a 3X100 tonnes per day Sponge Iron Plant at Jodidevarahalli Village, Sira Taluk, Tumkur District, and also set up in the year 2010, a Waste Heat Recovery based 10 MW Captive Cogeneration Power Plant, has filed this petition under Sections 61, 62 and 86(1)(e) of the Electricity Act, 2003 praying to:

(a) Determine a tariff of Rs.5.31 per unit towards of energy supplied by the Petitioner company to Respondent No.2 and direct the Respondent No.2 to execute a PPA at the said tariff for a period of 3 years from 01.02.2014, and,

(b) Pass any such Order, directions as the Commission deems fit in the circumstances of the case and in the interest of justice.

2) Subsequently, during the hearing of the petition, the Petitioner has sought directions to the Respondent to execute a PPA for a further period of 10 years from 01.02.2017.

3) The submissions made by the Petitioner in the Petition in support of its prayer may be summed up as follows:

(a) The Captive Cogeneration Power plant consists of three Waste Heat Recovery Boilers (WHRB) each of 2 MW capacity and one Atmospheric Fluidised Bed Combustion (AFBC) Boiler of 4 MW capacity. The system has a common turbine coupled with an alternator.

(b) The high temperature flue gases, generated from burning of coal in the kilns of the sponge iron plant, are passed through WHRB to produce steam and generate 6MW power from steam using the common turbine.

(c) By burning imported coal and dolochar obtained from the kilns of the sponge iron plant in AFBC Boiler, steam is produced and another 4 MW power is generated.

(d) The 10 MW Captive cogeneration plant was commissioned and synchronized with the grid on 26.04.2010, after obtaining necessary approvals from the concerned authorities.

(e) After commissioning the plant, the Petitioner has been supplying the infirm surplus power from its captive power plant to the Respondent No.2 under Short Term Power Purchase Agreement in the form of Memorandums of Understanding (MoU) (dated 22.07.2010, 15.02.2011 and 04.07.2013), entered into between the parties each for a period of six months. As mutually agreed the tariff was Rs.3.50 per unit during the first six months and Rs.3.70 per unit thereafter.

(f) Subsequently, a long term Power Purchase Agreement (PPA)was entered into on 29.01.2014, wherein the Respondent No.2, agreed to purchase the infirm power from the Petitioner at Rs.3.90 per unit for a period of 3 years. On such PPA being submitted by the Respondent No.2 to the Commission for approval, the Commission by its letter dated 13.03.2014 directed the Respondent No.2 that pending determination of Generic Tariff in respect of Waste Heat Recovery based Co-Generation power plants, the Respondent No.2 may purchase power from the Petitioner's Plant at a provisional rate of Rs 3.70 per unit.

(g) The Commission, in its generic tariff Order dated 01.01 2015, has observed that among other projects, the tariff in respect of Waste Heat Recovery Co-Generation projects, would be determined on a case to case basis, on petitions being filed before the Commission.

(h) The Petitioner has, therefore, filed this petition for determination of tariff in respect of infirm power from its plant. The Petitioner has continued to supply power to the Respondent No.2, who has been paying only Rs.3.70 per unit despite the Petitioner raising invoices at Rs.3.90 per unit and requesting full payment.

(i) The Petitioner's actual cost of generation of power is Rs.5.31 per unit as seen from the corresponding documents relating to capital goods, coal, O&M expenditure, etc., and the tariff of Rs.3.70 being paid by the Respondent No.2 is not economically viable.

4) Upon notices, the Respondents have entered appearance through their counsel. Respondent No.6 (GESCOM) filed a Memo, requesting for its deletion from the array of parties in the matter as it is neither a proper party nor a necessary party. Finding the prayer of the Respondent No. 6 to be justified, it was allowed.

5) On perusal of the petition, we were of the considered view that we may seek the assistance of a technical consultant to collect, study and analyse the financial parameters of the Petitioner's plant and other

similar plants, that are necessary for determination of tariff. Accordingly, the Centre for Study of Science, Technology and Policy, Bengaluru (C-STEP) was given the assignment.

6) The C-STEP, having completed its study, gave its finding in the form of a Report in March, 2017 (with a revised Report in April, 2017). The abstract of the parameters considered and the methodology adopted by C-STEP taking the life of the plant as 20 years, is as follows:

Sl. No.	Particulars	Unit	Values
1	Power plant Capacity	MW	10
2	Power Project Cost including Preoperative expenditure	Rs. Lakhs	6813.70
3	Pre-operative expenditure	Rs. Lakhs	1071.70
4	Debt: Equity	Ratio	77:23
5	Debt-Rs. Lakhs	Rs. Lakhs	52.49
6	Annual Interest charges on Debt	%	12.50
7	Debt Repayment period (Loan Tenure)	Years	12
8	Tax for first 10 years	nil	nil
9	Average annual gross energy Generation for last 6 years from FY-11 to FY-17	MU	73.70
10	Average Annual PLF for last 6 years from FY-11 to FY-17	%	84.13
11	Equity	Rs. Lakhs	1567.15
12	ROE	%	16
13	Auxiliary consumption	% of Gross Generation	12
14	Average O & M charges for the last 6 years from FY-11 to FY-17	Rs. lakhs	211.10
15	Annual O & M Escalation.	% of Annual O & M expenses	5.72
16	Working capital for 2 months	Rs lakhs	44.74
17	Annual Interest on Working capital	%	13.25
18	Depreciation		
a)	Salvage value	%	10
b)	Depreciable amount	Rs. lakhs	5707

c)	Depreciation for 1st 12 years	%	5.38
d)	Depreciable amount for 8 years from 13th to 20th Year	Rs Lakhs	154.11
e)	Depreciation for remaining 8 years	%	3.75
19	Average Annual fuel Consumption	MT	35347
20	Fuel requirement for generation of one kWh including AFBC+WHRB	Kgs /kWh	0.482
21	Fuel Cost in Rs.		
a)	Weighted average CGV of Coal	k cal/kg	5543
b)	Coal Rate average of last 6 years	Rs/MT	4832
c)	Dolochar Rate	Rs/MT	2200
	Fuel mix (Coal + Dolchar)		
	Fuel Mix (Coal+dolochar)		
	i)Coal	%	60
	ii)Dolochar	%	40
d)	Weighted Average fuel cost	Rs/MT	3779
22.	Levelized Tariff	Rs./unit	Rs.4.54

On the basis of the above, the C-STEP has arrived at a levelised Tariff Rs.4.54 per unit. After providing a copy of the Report to the parties, the Commission thought it fit to have public consultation in the matter by causing an abridged version of the petition to be published in both Kannada and English newspapers inviting suggestions and objections from the stakeholders.

7) The suggestions and objections received may be summed as follows:

(a) The Karnataka Sponge Iron Manufacturers' Association has submitted that:

(1) as against PLF of 84.13% considered, the industry agrees for its reduction by about 5%;

(2) whereas the Petitioner's plant has 3 WHRBs and 1AFBC boiler, most of the sponge iron units have 2 WHR boilers and 1 AFBC

boiler and thus, the power generated from AFBC boiler is around 75% of the installed capacity;

(3) while the industry norm of the proportion of dolochar is about 40% in the total fuel requirement for the AFBC boiler, as considered in the Report, the ideal usage is about 30% for achieving better performance of the AFBC boiler and plant availability; and,

(4) whereas the levelised fuel cost component considered in the report is Rs.2.46 per kWh, as per the industry data, it is about Rs.3.10 per kWh and therefore the levelised tariff should be at Rs.5.18 with fixed cost at Rs.2.07 per kWh, as considered in the Report.

8) Meanwhile, the counsel for Petitioner prayed that a public hearing should be held as the contract with the Respondent No.2 has expired but power is being supplied to the Respondent No.2. Thereafter, a Public Hearing was held on 22.06.2017 giving an opportunity to the interested persons to submit their views in the matter. In the Public Hearing, among others, the representative of the Karnataka Sponge Iron Manufacturers Association has reiterated their written submission and urged that the generic tariff should be determined as applicable to all similarly placed plants. The counsel for the Petitioner has urged that waste heat recovery based cogeneration of power should be encouraged, as it is environmental friendly and energy efficient and as against Tariff of Rs.4.54 per unit suggested by C-STEP, a tariff of Rs.4.65 per unit be fixed considering the additional cost of 10 paise per unit on account of interest on coal inventory expenses and tax on auxiliary consumption.

9) We have heard the counsel for the parties and the representative of the stakeholders who chose to participate in the public consultation process and examined the documents including the report of C-STEP. The following issues would arise for our consideration:

(1) Whether tariff should be determined for the Petitioner's plant as prayed in the petition or a generic tariff be determined as applicable to all Waste Heat Recovery based Cogeneration power plants?

(2) Whether the Petitioner has made out a case for fixing tariff at Rs.4.65 per unit?

(3) Whether the Petitioner has made out a case for directing the Respondent No.2 to enter into a fresh PPA for a term of 10 years from February, 2017 onwards?

(4) What Order?

10) After considering the pleadings and the documents on record and the submissions of the parties in the case, our findings on the above issues are as follows:

11) **ISSUE No.(1):** *Whether tariff should be determined for the Petitioner's plant as prayed in the petition or a generic tariff be determined as applicable to all Waste Heat Recovery based Cogeneration power plants?*

(a) The present Petition is filed by the Petitioner praying for determination of tariff for its plant on the grounds that the Commission did not approve the tariff of Rs.3.90 per unit agreed to in the short term PPA signed with the Respondent No.2 for supply of power for 3 years from 01.02.2014 and that the Commission in its Order dated 01.01.2015 provided for tariff determination on case to case basis.

(b) Karnataka Sponge Iron Manufactures Association has urged that generic tariff be determined as applicable to all Waste Heat Recovery based Co-generation power plants by giving its suggestions and objections on the Report of C-STEP. It has, however, not provided any particulars of capital cost and other components of any other similar power plant.

(c) The C-STEP, whose services were availed by the Commission to assist in the tariff determination process, has submitted the Report based on the technical and financial parameters of the Petitioner's plant. We note that the Karnataka Sponge Iron Manufacturers Association has submitted that as against 3WHR boilers and 1 AFBC boiler as in the Petitioner's plant, other plants generally have 2 WHR boilers and 1 AFBC boiler. Thus, any tariff determination based on the inputs provided by the C-STEP after studying the technical and financial parameters of the Petitioner's plant cannot be made applicable to all Waste Heat Recovery based Cogeneration plants in the State.

(d) We note that the question of determination of tariff in the Petitioner's case arose because of the PPA executed for a period of three years much after the commissioning of the Petitioner's plant and not for the life of the plant as generally done in other cases. It is not the Petitioner's case that the Respondent No.2 has offered to purchase power from the Petitioner for the rest of its plant's life either. Hence, we decide that as prayed by the Petitioner, we would proceed to determine tariff only in respect of the Petitioner's plant.

(e) Thus, we answer Issue No.(1), accordingly.

12) **<u>ISSUE No.2</u>:** *Whether the Petitioner has made out a case for fixing tariff at Rs.4.65 per unit?*

(a) The Petitioner had prayed for determination of a tariff of Rs.5.31 per unit for a period of three years from 01.02.2014 and subsequently prayed for its determination at Rs.4.65 per unit based on the Report of the C-STEP which had suggested a tariff of Rs.4.54 per unit, on the ground that Petitioner incurs additional cost towards interest on coal inventory expenses and tax on auxiliary consumption. The Respondents No.1 to 5, apart from raising preliminary objections that the relief sought in the Petition was not supported by cogent reasons and valid documents, have not filed any further objections.

(b) Now we examine each of the parameters relevant for tariff determination as follows:

(i) Date of installation and commissioning of power plant:

Admittedly the Petitioner's 10 MW Waste Heat Recovery cum AFBC coal based Co-Generation power plant was commissioned in the year 2010 and accordingly FY 11 shall be so adopted for the purpose of tariff determination.

(ii) Capital Cost:

Based on the documents provided by the Petitioner, C-STEP has reported the capital cost of the Petitioner's 10 MW plant as Rs.6813.8 Lakhs which works out to Rs.681.38 Lakhs per MW as against Rs.6.00 crores adopted by the Petitioner in its calculation in the Petition. The C-STEP has stated that, on consultation with several independent energy consultants, it is found that the average capital cost of a WHR power project of similar size (10 MW) is between Rs.5.5 and Rs.6 Crores/ MW. Thus, we note that the capital cost of Rs.6.8 Crores/MW statedly incurred by the Petitioner is much higher compared to the industry standards. Admittedly, this is because, the Petitioner's project cost includes a pre-operative expense of more than Rs.10.00 Crores, that is about 15.72% of the total capital cost, incurred as a result of delay in commissioning of the plant and inclusion of several advanced features in the power plant like de-dusting systems, variable- frequency drive motors, automatic ash handling system etc., statedly to be energy efficient measures.

Thus we decide not to consider the preoperative expenses and cost of additional features over and above than what is reasonably required for such a plant incurred by the Petitioner and deem it proper to adopt a capital cost of Rs.600.00 Lakhs MW.

(iii) Outstanding Debt:

As Petitioner's plant has been commissioned during FY 11, we will consider the outstanding loan, year on year, from FY 11 onwards, for the purpose for determination of tariff.

(iv) Debt Equity Ratio:

The Petitioner has availed loans to an extent of Rs.52.49 crores, including secured debt and unsecured loans (i.e. 77% of capital cost) for the project, while the remaining amount was financed through equity.

Hence, we decide to adopt Debt Equity Ratio of 77:23 for determining the tariff, the same as reckoned by the C-STEP.

(v) Interest on Term Loan:

As per the Report of the C-STEP, the Petitioner has availed secured loans at interest rate of 13.25% for 6 years (including 6 months' moratorium) from three banks for the project and thereby, the debt portion is already cleared. The Petitioner has considered interest on term loan at 13% in the petition for tariff calculation, whereas the C-STEP has taken it at 12.5%.

We note that the Commission has considered an interest rate of 12.5% for determining the tariff for all the RE projects with a loan tenure at 12 years. Hence, the Commission decides to adopt interest rate of 12.5% p.a., for a loan tenure of 12 years.

(vi) Depreciation:

The Petitioner has taken depreciation at 10% for first 10 years in the petition. The Commission for tariff determination has been generally considering a depreciation rate of 5.83% for the initial 12 years and the remaining depreciable amount is distributed across the remaining 8 years of the life of the project (20 years being the life of the project). Depreciation is being calculated on 90% of the capital costs of the power plant using the Straight-Line Method (SLM), considering a salvage value of 10%. This methodology has been followed by the C-STEP in its Report.

The Commission, therefore, decides to adopt 5.83% on 90% of the capital cost, for initial 12 years' period and distribute the remaining depreciable amount across the remaining 8 years at 3.75% for the lifetime of the project using SLM for determining the tariff.

(vii) Return on Equity (RoE):

The Petitioner has not considered any Return on Equity and has considered only interest on term loan at 13% in the petition, whereas the C-STEP has considered RoE of 16%.

The Commission decides to adopt, Return on Equity at 16% on 23% of capital cost, as is being considered for other RE Projects.

(viii) Operation and Maintenance (O&M) Costs & its Annual Escalation:

On this account, the Petitioner has considered in the petition, Rs.21.08 Lakhs for 10 MW per month (Rs.253 Lakhs per year) which works out to Rs.25.3 lakhs per MW per year. The O&M costs generally include Establishment charges, Repairs and Maintenance of the plant and machinery, Electrical maintenance and the Refractory materials used in the AFBC. We note that the breakup of the O&M costs generally incurred by a waste heat recovery based co-generation plant, however, is not available.

As per the C-STEP Report, the Petitioner has assigned the maintenance of the plant to a third party on a fixed contract basis and has maintained separately the accounts for the O&M costs. The O&M costs for the past 6 years (from the time of commissioning of the power plant) are available in the Petitioner's audited balance sheets for those years. The average of the actual O&M cost incurred by the Petitioner for the past 6 years from FY11, as computed by the C-STEP is Rs.211.1 Lakhs for the 10 MW plant.

Hence, the Commission decides to adopt:

(1) Rs.211.1 lakhs per annum being the average O&M expense for the power plant of 10 MW, which amounts to Rs.21.11 lakhs per MW for the past 6 years from FY11 to FY16 and works out to 3.518% of the Capital cost, as per actuals.

(2) Annual escalation of 5.72% for the O & M Charges from FY17, onwards on par with the escalation allowed for other RE projects.

(ix) Working Capital and rate of Interest on Working Capital:

The Petitioner has considered Coal inventory cost at Rs.2.25 Lakhs per month amounting to Rs.3.37 Lakhs for 45 days and maintenance spares cost of Rs.90 lakhs, as working capital in the Petition with interest at 13%. The C-STEP has arrived at working capital of Rs.44.74 lakhs for 2 months with interest at 13.25%.

As per the Commission's norms for RE projects, the working capital required for a biomass based co-generation plant is the amount equivalent to 2 months' receivables which in the present case works to about Rs.40.82 lakhs with an interest rate of 13.25%.

Hence, the Commission decides to adopt working capital equal to two months' receivables, i.e., Rs.40.82 lakhs with an interest rate of 13.25 % for determining the tariff.

(x) Auxiliary consumption:

The Petitioner has considered Auxiliary Consumption of 10% in the petition and the C-STEP has taken it at 12%. The Commission has allowed auxiliary consumption at 10%, for the Rankine cycle based Biomass plants in its RE Tariff Order 2010.

Hence, the Commission decides to adopt the auxiliary consumption of 10%, for determining the tariff.

(xi) Plant Load Factor (PLF):

The Petitioner has considered PLF of 85% in the petition. As per the C-STEP Report, the average annual generation during the last 6 years of the plant operation is 73.7 MU, which works out to a PLF of 84.2 %.

Therefore, the Commission decides to adopt the plant load factor of 84.2 % for determining the tariff.

(xii) Fuel requirement, Fuel Cost and Fuel Escalation charges:

Fuel is required for the AFBC (Atmospheric Fluidised Bed Combustion) boiler and no fuel is required for WHRB (Waste Heat Recovery Boiler). The Petitioner's plant uses a mix of imported coal and dolochar as fuel in the AFBC boiler and the dolochar constitutes 40% of the total fuel consumption by the AFBC. We note that, based on the past 6 years' coal consumption, the power plant has consumed, on an average, 21,224 MT of imported coal and 14,150 MT of dolochar (produced in the Petitioner's Sponge Iron Plant Kilns) annually. The quantity of fuel (mix of coal and dolochar) required per kwh (Unit) of exportable generation in the power plant is furnished as in the following table by the C-STEP. The average purchase price of imported coal for the last 6 years is Rs.4832.00 per MT and the present market price of dolochar is Rs.2200.00 per MT.

Sl. No.	Particulars	Unit	Value
1	Average annual generation during last 6 years	MU	73.7
2	Auxiliary Consumption allowed	%	10
3	Net exportable Energy	%	90
4	Net generation of the power plant	MU	66.33
5	Fuel mix: Coal	%	60
6	Coal rate	Rs./MT	4,832
7	Fuel mix: Dolochar	%	40
8	Dolochar rate	Rs./MT	2,200
9	Weighted average fuel cost	Rs./MT	3,779
10	Annual fuel consumption (including dolochar)	MT	35,374
11	Fuel requirement per kWh of net power Generation	Kgs/kWh	0.5333

The Commission notes that the particulars furnished by the C-STEP are acceptable and, therefore, decides to consider:

(1) the average market cost of dolochar at Rs.2200 for MT for the last 6 years from FY 11 (though the same is a by-product of the Petitioner's Sponge iron plant, but has an economic value);

(2) the average cost of imported coal at Rs.4832 per MT for the last 6 years from FY 11;

(3) the fuel requirement of 0.533 kgs per kWh of exportable(Net) energy; and,

(4) annual fuel escalation charges at 3.28% for the year FY17 onwards.

(xiii) Discount Factor (Weighted average capital cost-WACC): The normative WACC is considered as the discount rate for the purpose of tariff calculation as follows:

$$WACC\% = \{(Equity * \%) + (Debt * \% \text{ of } Interest\ on\ term\ loan)\} / \{(Equity + Debt)\} * 100$$

Based on the above, the WACC will be 13.31 % with Equity of 23% at RoE at 16% and Debt of 77% at annual rate of interest of 12.5%.

(xiv) In the light of the above discussions, based on the following abstract of the approved parameters, the tariff with fixed and variable cost per kwh works out as follows:

Sl. No.	Parameters	Unit	Values
1	Project Life	Years	20
2	Capital Cost	Rs. Lakhs/MW	600
3	Debt Equity Ratio	77:23	77:23
4	Amount of Debt	Rs. lakhs	462
5	Equity	Rs. lakhs	138
6	Interest on Term Loan	%	12.50
7	ROE	%	16
8	Depreciation	Asset cost 95% of C.C and salvage value of 10% on asset cost. Depreciation of 5.83% on 85.5% of capital cost for first 12 years and balance spread over for remaining 8 years the life of the plant at 3.75%	
9	Working Capital - 2 Months receivables	Rs. lakhs/MW	40.82
10	Interest on working capital	%	13.25
11	O & M Charges as per average of last 6 Years	Rs. lakhs/MW	21.11
12	Annual Escalation on O & M Charges	%	5.72
13	Plant PLF	%	84.2
14	Auxiliary Consumption	%	10
15	Specific Fuel Consumption (Mixture of Coal & Dolochar in the ratio of 60:40)	Kgs/kWh	0.533
16	Fuel Cost		
	a) Coal	Rs. /MT	4832
	b) Dolochar	Rs. /MT	2200
	c) Weighted average fuel cost	Rs /MT	3779
17	Fuel Escalation charges w.e.f. FY17	%	3.28
18	Discount Factor (WACC)	%	13.31

(xv) Based on the above parameters, the tariff for 20 years works out as follows:

Sl. No.	Year	Tariff in Rs. per kWh		
		Levelised fixed charges for 20 years	Variable costs	Total
1	2010-11	1.67	2.02	3.69
2	2011-12	1.67	2.02	3.69
3	2012-13	1.67	2.02	3.69
4	2013-14	1.67	2.02	3.69
5	2014-15	1.67	2.02	3.69
6	2015--16	1.67	2.02	3.69
7	2016-17	1.67	2.09	3.75
8	2017-18	1.67	2.15	3.82
9	2018-19	1.67	2.23	3.89
10	2019-20	1.67	2.30	3.97
11	2020-21	1.67	2.37	4.04
12	2021-22	1.67	2.45	4.12
13	2022-23	1.67	2.53	4.20
14	2023-24	1.67	2.62	4.28
15	2024-25	1.67	2.70	4.37
16	2025-26	1.67	2.79	4.46
17	2026-27	1.67	2.88	4.55
18	2027-28	1.67	2.98	4.64
19	2028-29	1.67	3.07	4.74
20	2029-30	1.67	3.17	4.84

(xvi) We are of the considered opinion that determination tariff on cost plus basis would not be proper in the facts and circumstances of the present case where the nature of power supplied is infirm.

(xvii) We therefore hold that, in respect of power supplied to the Respondent No.2 in terms of the agreement dated 29.01.2014, the Petitioner be paid a tariff lesser by 5% than what is worked out for the relevant years in para (xv) above.

(c) Thus, we answer Issue No.2 accordingly.

13) **ISSUE No.(3)** : *Whether the Petitioner has made out a case for directing the Respondent No.2 to enter into a fresh PPA for a term of 10 years from February, 2017 onwards?*

(a) The Petitioner has pleaded for directing the Respondent No.2 to enter into a fresh short term PPA and also for payment towards power supplied during the pendency of its Petition. The Respondent No.2 has expressed its willingness to purchase the surplus infirm power from the Petitioner at the rate of Rs.3.60 per unit, being the lowest short term rate discovered through bidding, from 01.02.2017 onwards for a period of three years. The Petitioner in response has, however, sought a tariff of Rs.4.65 per unit and also an agreement for 10 years.

(b) We note that Tariff Policy 2016 stresses the need to harness captive generation to make competitive power available and also creation of enabling environment that encourages captive power plants to be connected to the grid so that distribution Licensees may buy their surplus power. Such captive plants are not extended banking facility. The surplus power from captive plants is in the nature of infirm power. Therefore, it appears that there is an obligation on the local distribution licensee to purchase the surplus power from captive plants at the tariff determined by the Commission, if such power is offered for sale. Admittedly, the Respondent No.2 is willing to procure surplus power from the Petitioner's plant but at lower rate and for a shorter period than sought by the Petitioner. We are of the considered opinion that we need to encourage the Petitioner's captive Waste Heat Recovery based Cogeneration plant which reduces environmental pollution, by enabling it to supply surplus power to the local distribution Licensee, the Respondent No.2 for a longer period at a reasonable rate that also protects the interest of consumer. We note that we are not determining tariff for a generator who supplies power to the distribution Licensee during the entire life of its plant on cost plus basis or that we are adopting a tariff that has been discovered through bidding from similarly placed plants. We also note that the surplus power supplied by the Petitioner's plant is in the nature of infirm power. Considering these facts of the case, we deem it fair and just that the Respondent No.2 may be required to purchase surplus power from the Petitioner's plant for a reasonable period of 10 years and pay a tariff lesser by 5% than what would work out for the life of the plant.

(c) Hence, we answer Issue No.3 accordingly.

14) **ISSUE No.(4)**: *What Order?*

For the foregoing reasons, we pass the following:

ORDER

(1) The Petitioner shall be paid for the power supplied during the term of the PPA dated 29.01.2014 entered into with the Respondent No. 2 at rates arrived after deducting 5% (five percent) from the tariff worked out for the relevant years in para 12(xv) above;

(2) The Respondent No.2 shall enter into a fresh PPA for a period of 10 (ten) years from 01.02.2017 to 31.01.2027 for purchase of surplus power from the Petitioner at rates arrived after deducting 5% (five percent) from the tariff worked out for the relevant years in para 12(xv); and,

(3) The parties shall adjust their rights and liabilities as per the tariff determined in this Order for the previous period from 01.02.2014 to the date of execution of the PPA in pursuance of this Order.

This Petition is disposed of accordingly.

Sd/-	Sd/-	Sd/-
(M.K. SHANKARALINGE GOWDA) CHAIRMAN	(H.D. ARUN KUMAR) MEMBER	(D.B. MANIVAL RAJU) MEMBER