



TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
5th Floor, Singareni Bhavan, Red Hills, Hyderabad-500 004

Order for Determination of Generic Tariff for Bagasse based Power Plants



TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
5th Floor, Singareni Bhavan, Red Hills, Hyderabad-500 004

DATED: 20.10. 2018

Present Sri. Ismail Ali Khan, Chairman

In the matter of

In the matter of determination of generic tariff for Bagasse based power projects in the State of Telangana for the control period 2018-2020 (i.e. FY 2018-19 and FY 2019-20).

In exercise of the powers conferred under Sections 62, 86 (1) (a), (b) and (e) of the Electricity Act, 2003, (Act 36 of 2003), read with the Tariff Policy and Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017, dated 17.04.2017 (CERC Regulations 2017) the Commission hereby determines the generic tariff for Bagasse based power plants (Bagasse plants) in the State of Telangana.

INTRODUCTION:

Electricity being an essential commodity is generated from several sources, which form part as raw material. As such generation is based on both conventional fuels and non-conventional fuels. Non-conventional fuels are based on renewable sources, which are available in abundance and can be used time and again.

2. Electricity is governed by the Act, 2003 at present and the rules and regulations are issued under the said Act, 2003 including but limited to policy framed by the government. Section 86 (1) (e) of the Act, 2003 requires the Appropriate Commission to promote renewable sources of energy and provide for connectivity with the grid and declare mandatory purchase of such energy to a minimum level of consumption in the area of the distribution licensee.

3. Towards this objective, the Government of India has been issuing policy statements from time to time exercising the power under the relevant Acts and at present Act, 2003. The latest policy announcement has been made in the National Tariff Policy of 2016.

4. The Andhra Pradesh Electricity Regulatory Commission (APERC) as it then was in the year 2000 initiated the process of determination of tariff for renewable energy and notified tariff by order dated 20.06.2001, which tariff was applicable up to 31.03.2004 for all types of renewable energy except solar. Thereafter, by another order dated 20.03.2004, the APERC had passed orders and revised tariff for the control period 2004-2009 identifying rates for specific type of fuel. Further, the then APERC determined tariff for renewable sources by an order dated 31.03.2009 for the period from 01.04.2009 to 31.03.2014. However, the said order did not notify the fixed cost norms for the ensuing projects in the said control period.

5. After a protracted litigation as understood from the orders of the then APERC, the Hon'ble Appellate Tribunal for Electricity (ATE) had set out the normative parameters in respect of the projects commissioned for the control period 2004-2009 by order dated 22.12.2012. While doing so, the Hon'ble ATE required the then Commission to notify the final tariff for the said period taking into consideration certain parameters approved by it.

6. The generic tariff as determined erstwhile APERC is applicable to the projects which generate power based on renewable energy sources such as bio-mass, bagasse, hydel, wind etc. The APERC passed a revised tariff order dated 22.06.2013, pursuant to order dated 22.12.2012 in Appeal Numbers 150 of 2011 and batch, and by order dated 30.04.2013 in R. P. 3 / 2013 and batch as passed by Hon'ble ATE, determining the tariff for Biomass, Bagasse based co-generation and mini-hydel power plants which were existing as on 31.03.2004 and those commissioned between 01.04.2004 to 31.03.2009 except for the projects covered by negotiated PPAs based on the norms indicated in the aforesaid orders of the Hon'ble APTEL. Further, the then APERC had passed orders on 06.08.2013 determining the variable cost for the period 2009- 2014 to give effect to the order of the Hon'ble ATE. Other terms and conditions of the order dated 31.03.2009 remained unaltered. The

then APERC had also determined the variable charges for the control period 2014 – 2019 by an order dated 16.05.2014 in O. P. 32 of 2014.

7. The NTP 2016 at sub clause 2 of clause 6.4 has provided as below.

“(2) States shall endeavor to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government. However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003. While determining the tariff from such sources, the Appropriate Commission shall take into account the solar radiation and wind intensity which may differ from area to area to ensure that the benefits are passed on to the consumers.”

8. One of the cogeneration plants running in the state of Telangana is M/s. NSL Krishanaveni Sugars Limited. It has filed a petition before the Commission for determination of the tariff for generation of energy from its 28.2 MW bagasse based cogeneration plant established at Ramkrishanapuram Village of erstwhile Mahaboobagar District (presently in Wanaparthy Dist). It has stated and brought to the notice of the Commission by filing a petition before it that it is a plant established in the year 2011 and has been undertaking supply of energy to the DISCOMs since then under the short term procurement in the absence of generic tariff order for the bagasse based cogeneration projects commissioned after 31.03.2009.

9. Noticing the above position and in view of the tariff policy notified by the Government of India, the Commission has now undertaken determination of the generic tariff for bagasse based cogeneration projects.

Overview:

Importance of Non-Conventional Energy Sources:

10. Non-Conventional Energy Sources are pollution free. Global concern over pollution problems caused by the increase in greenhouse gasses emission and consequent climate changes have resulted in paradigm shift in the approach towards

development of energy sector in all the countries. The need for adoption of clean technology, improving end use efficiency and diversifying energy bases, etc. have all been seriously considered by the Government of India since Sixth Five Year Plan. Electricity Act 2003, National Electricity Policy, Tariff Policy have all addressed the necessity for promotion of the co-generation and generation of electricity from renewable sources of energy.

Commission's order on NCES based generation and allied issues:

11. As has been stated in the introduction above, the history of tariff for non-conventional sources was determined by the then Andhra Pradesh Electricity Regulatory Commission (APEREC) as it then was. The then Commission passed several orders from time to time suo moto and as per directions of the appellate forums. However due to efflux of time and changes in the law and composition of the boundaries of the then existing state this Commission is required to undertake the exercise of determination of tariff for non-conventional projects and more particularly the bagasse based projects.

Floating of Consultative Paper:

12. The Commission in furtherance of the above stated over view has floated a consultative paper to elicit the views of the stakeholders before issuing a generic tariff order and hosted it in the Commission's website on 09.07.2018 inviting views / suggestions from the stakeholders. The list of stakeholders who submitted written comments is placed in Annexure-I. The Commission also heard the interested persons and stakeholders on 07.08.2018. Taking into account the views of various stakeholders, the Commission passed this comprehensive tariff order on Bagasse based co-generation plants.

Legal Provisions:

Provisions of the Act, 2003:

13. The relevant provisions of the Act, 2003 are extracted below for ready reference and better understanding.

Section 3 (1): National Electricity Policy and Plan

"The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system

based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.
.....”

Section 61 – Tariff Regulations

“The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff and in doing so, shall be guided by the following namely:-

.....

(h) The promotion of co-generation and generation of electricity from renewable sources of energy;

(i) The National Electricity Policy and tariff policy:”

Section 62: Determination of Tariff.

“ (1) The Appropriate Commission shall, subject to the provisions of this Act for –

(a) Supply of electricity by a generating company to a distribution licensee:

.....

(2): The Appropriate Commission may require a licensee or a generating company to furnish separate details, as may be specified in respect of generation, transmission and distribution for determination of tariff.

.....

(5): The Commission may require a licensee or a generating company to comply with such procedure as may be specified for calculating the expected revenues from the tariff and charges which he or it is permitted to recover.

.....”

Section 63: Determination of tariff by bidding process

“Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government.”

Section 86: Functions of State Commission

“(1)

(e): Promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;
.....”

Related Provisions of the National Electricity Policy:

14. The guidelines stipulated in the National Electricity Policy on NCES, which are relevant, are reproduced below:

Clause 5.2.20:

“(1) Feasible potential of non-conventional energy resources, mainly small hydro, wind and biomass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures.
.....”

Clause 5.12.1:

“Non-conventional sources of energy being the most environment friendly, there is an urgent need to promote generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of projects based on non-conventional and renewable sources of energy. Cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources.”

Clause 5.12.2:

“The Electricity Act 2003 provides that co-generation and generation of electricity from non-conventional sources would be promoted by the SERCs by providing suitable measures for connectivity with grid and sale of electricity to any person and also by specifying, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee. Such percentage for purchase of power from non-

conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest. Progressively the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase by distribution companies shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies.

.....”

Related Provisions in the Tariff Policy:

15. The Commission is also guided by the following specific provisions of the Tariff Policy of Government of India (Ministry of Power) relating to NCES:

Clause 5 (11) (i)

“Tariff fixation for all electricity projects (generation, transmission and distribution) that result in lower Green House Gas (GHG) emissions than the relevant base line should take into account the benefits obtained from the Clean Development Mechanism (CDM) into consideration, in a manner so as to provide adequate incentive to the project developers.

.....”

Clause 6.0:

“Accelerated growth of the generation capacity sector is essential to meet the estimated growth in demand. Adequacy of generation is also essential for efficient functioning of power markets. At the same time, it is to be ensured that new capacity addition should deliver electricity at most efficient rates to protect the interests of consumers. This policy stipulates the following for meeting these objectives.

.....”

Clause 6.4(1):

“Pursuant to provisions of section 86 (1) (e) of the Act, the appropriate Commission shall fix a minimum percentage of the total consumption of electricity in the area of a distribution licensee for purchase of energy from renewable energy sources, taking into account availability of such resources and its impact on retail tariffs. Cost of purchase of renewable energy shall be

taken into account while determining tariff by SERCs. Long term growth trajectory of Renewable Purchase Obligations (RPOs) will be prescribed by the Ministry of Power in consultation with MNRE.”

Clause 6.4 (2):

“States shall endeavor to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government.

However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003. While determining the tariff from such sources, the Appropriate Commission shall take into account the solar radiation and wind intensity which may differ from area to area to ensure that the benefits are passed on to the consumers.

.....”

Applicability of this Order:

16. The order shall come into force with effect from date of publication on the website of the Commission. The tariff proposed to be fixed shall be applicable to all bagasse based co-generation plants commissioned during the control period specified in this order. The control period for the purposes of this order will be 2018 – 2020 (2018 – 19 to 2019-20). The order now being passed is also adoptable those projects whose commercial operation date happened to be after the year 2009 for which they have obtained sanctions and permissions from the competent nodal agencies in the combined state of Andhra Pradesh and later in the state of Telangana. However for such projects the respective tariff will be at year levelized and relevant for the current year onwards. This order is also made applicable to those projects which have obtained sanctions and permissions from the competent nodal agencies in the combined state of Andhra Pradesh and later in the state of Telangana but have not yet commissioned the project and are likely to commission the same during the control period 2018-2020.

Tariff Methodology:

Cost-Plus Tariff Determination:

17. Cost-plus tariff determination is a more practicable method but it discourages competition and efficiency. However, to encourage the setting up of new co-gen plants, cost plus tariff method is followed. As it can be easily designed to provide adequate return to the investor as assured return will lead to larger investment in renewable power. Accordingly, the Commission proposes the cost plus tariff approach in this order. The Commission in this order determines levelled fixed cost and notifies the actual fuel price escalation and consequent variable cost every year based on indexation methodology.

Tariff Components:

18. The Commission has carried out a detailed analysis of the existing policies / procedures and commercial mechanisms in respect of bagasse based co-generation and following important factors have been considered to arrive at the tariff and other related issues for bagasse based co-generation.

1. Capital Cost per MW
2. Plant Load Factor (PLF)
3. Debt – Equity ratio
4. Term of Loan and Interest
5. Return on Equity (RoE)
6. Life of plant and machinery
7. Depreciation
8. Operation & Maintenance (O & M) Expenses
9. Interest and components of working capital
10. Station Heat rate
11. Gross Calorific Value (GCV) of the fuel
12. Fuel Cost
13. Auxiliary consumption

19. Each of the issues have been discussed in detail in the subsequent paragraphs taking into consideration the views of the stake holders both written oral made by them.

TSDISCOMS VIEWS ON THE PROCEEDINGS:

20. The distribution companies in the State of Telangana have submitted their views in generic form and not on specific issues. The submissions are as below:

- (i) Hon'ble TSERC issued RPPO Regulation No. 2 of 2018 mandating TSDISCOMs to purchase from Renewable Energy Sources a minimum quantity (in Kwh) of electricity expressed as a percentage of its total consumption of energy, during FY 2018-19 to FY 2021-22 as follows:

Year / RPPO	2018-19	2019-20	2020-21	2021-22
Non-Solar	0.67%	0.73%	0.79%	0.90%

- (ii) As per the approved projections in Retail Supply Tariff Order for FY 2018-19, TSDISCOMs would be meeting the Non-Solar RPPO purchases with 1.01% as against the prescribed 0.67%.
- (iii) Therefore, TSDISCOMs are under no obligation to procure power from Bagasse based Cogeneration projects with generic tariff under Section 62 of Electricity Act, 2003.
- (iv) Besides, the National Tariff Policy, 2016 mandates the procurement of Power from RE Sources except Waste to Energy Projects on Competitive Bidding route alone.
- (v) As such, under the provisions of the National Tariff Policy, 2016, many of the States have shifted from MoU route to Competitive Bidding route.
- (vi) TSDISCOMs are not inclined to submit views / comments on the financial operational parameters proposed in the discussion paper in view of the Competitive Bidding process mandated by National Tariff Policy, 2016.
- (vii) In light of the above, the Hon'ble Commission may kindly notify the guidelines for procurement of power from Bagasse based Cogeneration projects under competitive bidding process.

Capital cost per MW:

Comments / suggestions:

21. M/s. NSL Krishnaveni Sugars Limited (NSL) has stated that the Commission may consider Rs. 4.60 Crores / MW as per their petition. M/s. Telangana Sugar Mills

Association (TSMA) has stated that the Commission may consider Rs. 5.00 crores / MW.

Commission's View:

22. The Commission notices that there was no objection raised from developers regarding the capital cost of Rs. 3.25 crs / MW as mentioned in the then APERC order dated 12.09.2011 in R. P. No. 84 / 2003 in O. P. No. 1075 / 2000 wherein no distinction was made between old and new projects with respect to capital cost. The same is also taken into consideration by the Hon'ble ATE in the order dated 20.12.2012 in appeal No.150 of 2011. Hence the Commission has adopted a capital cost Rs. 3.25 Crores / MW for the base year 2004-05 with an escalation of 5% up to 2010-11. Thus, the capital cost arrived at is Rs. 4.35 Crores / MW. The capital cost includes evacuation cost upto the inter-connection point.

Plant Load Factor (PLF):

Comments / suggestions:

23. M/s. NSL has stated that PLF of 55% as per APTEL order dated 20.12.2012 is appropriate and may be considered by the Commission. M/s. TSMA has stated that barring FY 2014-15 where PLF was 40%, the co-gen units have never achieved a PLF of above 35% and hence it sought consideration of fixing PLF at 35% whereby the sugar factories can recover the fixed costs.

Commission's View:

24. Considering the availability of fuel during the crushing and non-crushing season the Commission considers the threshold level PLF that can be achieved as 55%. The same was considered in the then APERC order dated 20.03.2004. The Commission also views that no issue was raised by the developers with respect to PLF regarding its achievability or otherwise and the same was also considered by the Hon'ble ATE in its order dated 20.12.2012, hence, the Commission decides to adopt the PLF of 55% for the purpose of tariff determination.

Debt – Equity Ratio:

Commission's View:

25. The Tariff Policy notified by the Government of India (GoI) lays down a debt-equity ratio of 70:30 for power projects. Commission in its previous orders had also adopted a debt equity ratio of 70:30 while determining the tariff either on generic

basis or on individual basis. Accordingly, the Commission decides to adopt the ratio of 70:30 for this purpose.

Term of Loan and Rate of Interest:

Comments / suggestions:

26. M/s. TSMA has stated that the credit rating of the industry with the bankers has been adversely affected and no bank is prepared to finance sugar industry at the rate of 11.66% rate of interest proposed by the Commission. Even the GoI while determining the interest subsidy to be extended to the sugar industry has allowed an interest rate of 12%. Therefore, it sought consideration of 13% as the normative rate of interest.

Commission's View:

27. The Commission while examining the normative noticed that as per latest CERC guidelines the interest rate of 200 basis points and 300 basis points above average SBI MCLR (one year period) prevalent during the last available six months respectively for term loan and working capital loans for the determination of tariff has been adopted. The monthly data of MCLR for the last available six months from State Bank of India and the average MCLR is shown in the table 1 below.

Table - 1

beginning of the Month	1 Year Tenor MCLR Rates
April-18	8.15
May-18	8.15
June-18	8.25
July-18	8.25
Aug-18	8.25
Sep-18	8.45
Average Rate	8.25

However as per the average of last six months that is 01.04.2018 to 01.10.2018 applicable as on the date of this order as arrived at in the table above would be 10.25%. Based on the above analysis of the data, Commission decides to adopt a figure of 10.25% per annum and 11.25% per annum respectively for term loan and working capital for this purpose.

Return on Equity (RoE):

Commission's View:

28. The Commission has examined the issue in the absence of any submission from the stakeholders. Clause 16 (2) of the CERC Regulations, 2017, stipulates that the normative RoE shall be 14 %, to be grossed up by prevailing MAT as on 1st April of previous year for the entire useful life of the project. The RoE as proposed at 17.60% is based on grossing up of average MAT rates as on 01.04.2017 on normative rate of return on equity of 14% detailed as under.

Note: (a) MAT rates, as on 01.04.2017, for companies having profit less than Rs. 1 Cr, between Rs. 1 Cr & 10 Cr and above Rs. 10 Cr are 19.055%, 20.389% and 21.342% respectively, resulting in an average MAT rate of 20.26%. Accordingly, the RoE is arrived at 17.60%.

(b) Similarly, the MAT rates, as on 01.04.2018, for companies having profit less than Rs. 1 Cr, between Rs. 1 Cr & 10 Cr and above Rs. 10 Cr is 19.24%, 20.59% and 21.55% respectively resulting in an average MAT rate of 20.46%.

Thus, the normative rate of return on equity of 14% when grossed up by average MAT rate of 20.46% being the prevailing MAT rate (as on 01.04.2018) would result in a ROE of 17.60%. Accordingly, the Commission considers it to adopt RoE of 17.60%.

Life of Plant and Machinery:

Commission's View:

29. In the absence of specific comments of the stakeholders on the normative, the Commission considers the useful life of the plant as 20 years as per CERC Regulation, 2017.

Depreciation:

Commission's View:

30. The Commission finds that the stake holders have not raised any issue on this aspect and therefore proceeds to examine the issue. Clause 15 of the CERC Tariff Regulations 2017 provides for computation of depreciation in the following manner:

“(1) The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.

(2) Depreciation rate of 5.28% per annum for first 13 years and remaining depreciation to be spread during remaining useful life of the RE projects considering the salvage value of the project as 10% of project cost shall be considered.

(3) Depreciation shall be chargeable from the first year of commercial operation. Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis”.

Hence the Commission considers depreciation of 5.28% for 13 years and 3.05% from 14th year onwards as per CERC norms.

Operation and Maintenance (O & M) Expenses:

Commission’s View:

31. The Commission appreciates that the stakeholders have left the significant parameter untouched without commenting on the discussion paper. As per Clause 50 of CERC Tariff Regulations, 2017, the normative O & M expenses for non-fossil fuel co-generation projects for the first year of the control period (FY 2017-18) has been specified as Rs. 21.13 Lakhs per MW, which shall be escalated at the rate of 5.72% per annum over the tariff period. The Commission has proposed O & M cost norm for Non-fossil fuel based co-generation plant as Rs. 22.18 Lakhs per MW (21.13 lakhs / MW with 5% escalation) for FY 2018-19. Considering the above provision, the Commission adopts O and M expenses to be at Rs. 22.18 lakhs to be factored in the tariff.

Interest and Components of working capital:

Comments / suggestions:

32. M/s. TSMA has stated that the credit rating of the industry with the bankers has been adversely affected and no bank is prepared to finance the sugar industry at the rate of 11.66% rate of interest proposed by the Commission. Even the GoI while determining the interest subsidy to be extended to the sugar industry has allowed interest rate of 12%. Therefore, it sought consideration of 13% as the normative rate of interest.

Commission’s View:

33. The Commission adopts similar reasoning as has been stated by it in respect of interest on term loans, and accordingly, the interest on working capital is adopted as 11.25% per annum.

Station Heat Rate (SHR):

Comments / suggestions:

34. M/s. TSMA has stated that the SHR considered by the Commission is too low and practically not possible to achieve with the available material. The bagasse consumption during the season for power generation including process steam is found to be between 2.7 to 3.0 kg / Kwh of electricity generated depending on the operating parameters of the plant. This translates to the gross SHR of 6075 to 6750 kcal / Kwh of bagasse during season and 4300 to 4400 kcal / Kwh of bagasse during off-season as per actual operational data. Hence it is prayed that SHR be fixed at an average of SHR during season and off-season.

Commission's View:

35. The Commission considers that the submission is misplaced and with the advancement of the technology the SHR of 3600 kcal / kWh as adopted by CERC and Hon'ble ATE are appropriate. Accordingly, it adopts normative SHR to be at 3600 kcal / kWh.

Gross Calorific Value (GCV) of the fuel:

Commission's View:

36. The Commission is of the view that the industry association and the stakeholders have not shown any reasons to differ with the conclusions arrived at by the CERC and the hon'ble ATE. Therefore, the Commission has considered and adopts a GCV of 2250 kCal / kg as per the norms adopted by CERC and APTEL.

Fuel Cost:

Comments / suggestions:

37. M/s. NSL has stated that the Commission may consider market price or indexation price whichever is higher while fixing the fuel price. Shri Sourabh Srivastava has stated that the price applicable to bagasse considering the clean

nature and local production as a byproduct, ought to be based entirely on the ROM price of coal without inclusion of any tax / duty applicable to coal (Rs. 1029/ MT). Arbitrary allowance of escalation at the rate of 6% be dispensed with. The escalation may be linked to CERC notified 6 monthly escalation rates for power procurement through competitive bidding. As an alternative, the escalation may be considered based on some formula ensuring compensation for Inflation indices only.

Commission's View:

38. In the consultative paper the Commission had proposed a fuel cost of Rs. 1743 / MT with an escalation of 5% from the 2nd year onwards. It is relevant to state here that the indexation method and escalation of variable cost as propounded by then APERC and followed by this Commission has not been objected to this date and has been well received by the industry. If the said formula works satisfactorily for variable cost, then there is no reason why it should not be adopted for purpose of determining the fuel cost. In this background the Commission adopts the methodology of notifying the actual fuel price escalation and consequent variable cost every year based on indexation methodology.

Auxiliary Consumption:

Comments / suggestions:

39. M/s. TSMA has stated that the auxiliary consumption in sugar mills will be around 10% owing to the power consumption of 22 units for every ton of sugarcane crushed and requested to consider the same to be pegged at 10%.

Commission's View:

40. The Commission is of the view that non-fossil fuel based cogeneration plants have some of the auxiliary equipment common between the sugar mill and the power generation unit. Also, the bagasse requires less processing compared to the biomass. Therefore, the Commission decides to consider the auxiliary consumption of 9% as decided by APERC in its earlier orders and also adopted by the Hon'ble ATE while arriving at the parameters and normative in deciding the appeals then.

Tariff Determination:

41. Based on the discussion on the various components of the tariff in the preceding paragraphs, the financial and operational parameters in respect of

bagasse based cogeneration power projects has been considered and adopted in the present order which are tabulated in the table No. 2 below:

Table - 2

Sl. No.	Particulars	Units	TSERC
1	Installed Power Generation considered for workings	MW	1
2	Auxiliary Consumption	%	9.00%
3	PLF	%	55%
4	Useful life	Years	20
5	Capital Cost	Rs Lakhs / MW	435.5
6	Debt	%	70%
7	Equity	%	30%
8	Total Debt Amount	Rs. in Lakhs	304.85
9	Total Equity Amount	Rs in Lakhs	130.65
10	Interest on Debt	% PA	10.25%
11	Return on Equity (Pre-Tax)	% PA	17.60%
12	Discount Rate (Equity to WACC)	%	9.29%
13	Depreciation		
a	Depreciation Rate for 1 st 13 years	%	5.28%
b	Depreciation Rate 14 th year onwards	%	3.05%
14	Working Capital		
a	For Fixed charges		
	O & M Charges	Months	1
	Maintenance spares (15% of O & M expenses)	Rs. In lakhs	3.327
	Receivables for Debtors	Months	2
b	For Variable Charges		
	Bagasse stock	Months	1
15	Interest on working Capital	% PA	11.25%
16	Heat rate	Kcal / KW hr	3600
17	GCV	Kcal/Kg	2250
18	O & M Expenses	Rs Lakhs / MW	22.18
19	O & M Escalation		5.00%
20	Levellized Fixed Cost for the life of the plant	Rs./unit	2.23

Conclusion:

42. The Commission has considered all the parameters and submissions brought before it with reference to its discussion paper and it is of the view that the submissions made in respect of certain issues do not satisfy the normative conditions nor can they be factored while determining the tariff. Therefore, the Commission has arrived at the tariff based on the normatives that are taken into consideration and discussed thoroughly in this order. Based on the discussion, the

final tariff is arrived at, which is applicable in the State of Telangana for bagasse based co-generation projects for the period FY 2018-2020 (FY 2018-19 and 2019-20) in terms of the applicability stated at paragraph 16 of this order.

43. The Commission has determined the levelized fixed cost to be at Rs.2.23 per unit as shown in the Table – 2 above read with the calculation regarding year-wise fixed cost indicated in the Annexure – III. Insofar as variable cost is concerned, the Commission adopts the methodology of notifying the actual fuel cost escalation and consequent variable cost every year based on the indexation methodology.

This order is corrected and signed on this 20th day of October, 2018.

**Sd/-
(ISMAIL ALI KHAN)
CHAIRMAN**

// CERTIFIED COPY//

Annexure-I

List of Entities/Individuals who have submitted suggestions / comments

1. M/s. NSL Krishnaveni Sugars Limited,
Regd. & Corp Off: NSL Icon, PlotNo. 1 to 4,
Road No. 12, Banjara Hills, Hyderabad, Telangana – 500 034.
2. M/s. Telangana Sugar Mills Associations,
5-9-22 / 69, Adarshnagar, Hyderabad – 500 063.
3. Sri. Saurab Srivastava

Annexure-II

List of Individuals in attendance in public hearing held on 7th August, 2018

Sl. No.	Name of the Individual	Name of the organization represented
1	Sri. Someswara Prasad K. M.	AGM (Power Trading), M/s. NSL Krishnaveni Sugars Limited.
2	Sri. Madhu Rejet	M/s. NSL Krishnaveni Sugars Limited.
3	Sri. M. Srinivasa Rao	M/s. Madhucon Sugars Private Limited
4	Sri. D. V. S. Chowdary	M/s. Madhucon Sugars Private Limited
5	Sri. K. Satish Kumar	DE / RAC, TSSPDCL
6	Sri. T. Madhusudhan	CGM / IPC & RAC, TSNPDCL

Determination of Tariff for non-fossil fuel based co-generation Projects

Financial Year		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Variable cost with Fuel Escalation up to 2018-19 as per Orders of APERC/TSERC, thereafter in indicative 6% Escalation as per APERC order dated 16.05.2014	Rs/KW/hr	1.75	1.84	1.93	2.03	2.73	2.93	2.79	2.81	3.06	3.25	3.44	3.65	3.87	4.10	4.35	4.61	4.88	5.18	5.49	5.82
Total COG with VC as per APERC/TSERC orders up to 2018-19		3.99	4.07	4.16	4.26	4.96	5.16	5.02	5.04	5.30	5.48	5.67	5.88	6.10	6.33	6.58	6.84	7.11	7.41	7.72	8.05