



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

O.P.No.32 of 2014
(Suo Moto)

Dated 09.11.2023

Present

Sri. T. Sriranga Rao, Chairman
Sri. M. D. Manohar Raju, Member (Technical)
Sri. Bandaru Krishnaiah, Member (Finance)

Consequential order as per directions of the Hon'ble APTEL Judgement dated 08.03.2022 in Appeal No.250 of 2014, Appeal No.284 of 2014, and Appeal No.297 of 2014 & I.A.No.178 of 2015 and Appeal No.42 of 2016 in the matter of determination of revised fuel cost & revised fuel escalation for biomass-based power plants and review of the fuel cost of bagasse-based power plants for the period from 01.04.2014 to 31.03.2019 (i.e., for FY 2014-15 to FY 2018-19) located in the State of Telangana.

ORDER

Chapter-1
Introduction

1.1 BACKGROUND

Commission Order dated 16.05.2014 in O.P.No.32 of 2014 (Suo Moto)

- 1.1.1 The erstwhile Andhra Pradesh State Electricity Regulatory Commission (APERC) of the undivided State of Andhra Pradesh has passed the order dated 16.05.2014 in O.P.No.32 of 2014 (Suo Moto) *inter alia* determining the variable component of tariff for the period from 01.04.2014 to 31.03.2019 (i.e., for FY 2014-15 to FY 2018-19) in respect of the existing plants based on Non-Conventional Energy (NCE) sources viz., biomass, bagasse and industrial waste-based power projects in the State. In determining the variable cost norms for biomass, bagasse and industrial waste sources the erstwhile APERC has adopted a holistic approach and distilled the independent finding of the following seven elements:

- i) Floated a consultation paper on the norms for variable cost determination for biomass, bagasse, industrial waste and single part tariff for municipal waste projects.
- ii) Conducted a public hearing on the issues identified in the consultation paper and noted the comments, objections, suggestions of various stakeholders.
- iii) Scrutinised the CEA report on “*Operation norms for biomass-based power plants*” published in September, 2005 with reference to its applicability to Andhra Pradesh.
- iv) Scrutinised the CERC Committee report on the “Performance/viability of biomass-based plants operating in the country including the prevailing biomass prices” published in July, 2013 with reference to its applicability to Andhra Pradesh.
- v) Engaged M/s KPMG as an independent consultant with a mandate to analyse the operating parameters/norms and economics of NCE projects in general with special referent to their working in Andhra Pradesh to prepare a study report on the determination of cost and performance norms for NCE sources.
- vi) Undertook field visits to three (3) biomass power plants located in Andhra Pradesh viz., (i) M/s JOCIL Ltd., (ii) M/s Matrix Power Pvt. Ltd. and (iii) M/s Ind-Barath Energies Ltd.
- vii) Analysed relevant CERC and State Electricity Regulatory Commission’s (SERC) orders and regulations with reference to determination of variable cost norms for NCE sources including the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) (first amendment), Regulation, 2014.

For biomass-based power projects: The following norms were considered for computing the variable cost for the period FY 2014-15 to FY 2018-19.

Description	Units	Norms
Applicability (Variable Cost)	Period	FY 2014-15 to FY 2018-19
Station Heat Rate (SHR)	kCal/kWh	4,200
Auxiliary Consumption	%	10%
Gross Calorific Value (GCV)	kCal/kg	3,100
Fuel Price (FY 2014-15)	Rs./tonne	2,843
Fuel Price Escalation	%	Indicative (6%) as below, actual fuel price escalation would be notified by the Commission before the start of each financial year starting from FY 2015-16
	<i>FY 2014-15</i>	<i>Rs./Unit</i>
	<i>FY 2015-16</i>	<i>Rs./Unit</i>
	<i>FY 2016-17</i>	<i>Rs./Unit</i>
	<i>FY 2017-18</i>	<i>Rs./Unit</i>
	<i>FY 2018-19</i>	<i>Rs./Unit</i>
Specific Fuel Consumption	kg/kWh	1.35

For bagasse-based power projects: The following norms were considered for computing the variable cost for the period FY 2014-15 to FY 2018-19.

Description	Units	Norms
Applicability (Variable Cost)	Period	FY 2014-15 to FY 2018-19
Station Heat Rate (SHR)	kCal/kWh	3,600
Auxiliary Consumption	%	9%
Gross Calorific Value (GCV)	kCal/kg	2,250
Fuel Price (FY 2014-15)	Rs./tonne	1,551
Fuel Price Escalation	%	Indicative (6%) as below, actual fuel price escalation would be notified by the Commission before the start of each financial year starting from FY 2015-16
	<i>FY 2014-15</i>	<i>Rs./Unit</i>
	<i>FY 2015-16</i>	<i>Rs./Unit</i>
	<i>FY 2016-17</i>	<i>Rs./Unit</i>
	<i>FY 2017-18</i>	<i>Rs./Unit</i>
	<i>FY 2018-19</i>	<i>Rs./Unit</i>
Specific Fuel Consumption	kg/kWh	1.60

Commission notified actual Fuel Price escalation & variable cost for the period from FY 2015-16 to FY 2018-19

- 1.1.2 Subsequently, the Commission in its various *Suo Moto* orders has notified the actual fuel price escalation and variable cost for the period from FY 2015-16 to FY 2018-19 in respect of the existing plants based on Non-Conventional Energy (NCE) sources in the State of Telangana as detailed below:

Financial Year	Suo Moto Order Date	For Biomass-based power project			For Bagasse-based power project		
		Fuel Price Rs./Tonne	Fuel price escalation %	Variable Cost Rs./Unit	Fuel Price Rs./Tonne	Fuel escalation %	Variable Cost Rs./Unit
2015-16	16.07.2015		7.53%	4.60		7.53%	2.93
2016-17	04.04.2016	2903	-5.02%	4.37	1583	-5.02%	2.78
2017-18	08.06.2017	2931	0.95%	4.41	1598	0.95%	2.81
2018-19	10.04.2018	3197	9.08%	4.7955	1743	9.08%	4.0646

Commissions' common generic Order dated 19.07.2014 in O.P.No.11 of 2010 & others

- 1.1.3 Further, a common generic order dated 19.07.2014 in O.P.Nos.11 of 2010, 18 of 2013, 19 of 2013, 48 of 2013, 49 of 2013, 57 of 2013, 23 & 30 of 2014 and 26 of 2014 has been passed by the erstwhile APERC *inter alia* determining the fixed cost for all biomass-based power plants for 11th to 20th year of operation in respect of the plants which have completed 10 years of operation. The erstwhile APERC has extended the holistic approach in determination of fixed cost as that of considered in determination of variable cost i.e., distilled the independent finding of the following three elements apart from the aforesaid seven elements (i.e., a total of ten elements):

- i) Considered the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 and its subsequent amendments.
- ii) The written and oral submissions made by both the parties in their petitions and the documents submitted by them in support of their respective contentions.
- iii) The operational financial, commercial and generation details, supported by the relevant balance sheets and Profit & Loss accounts (from COD till 31.03.2013) as well as projections into the future submitted by the respondent.

For biomass-based power projects: The following norms were considered and computed the fixed cost (exclusive of Income Tax and Minimum Alternate Tax) for the period FY 2014-15 to FY 2018-19.

Description	Units	Norms
Applicability (Fixed Cost)	Period	11 th to 20 th year of operation
Capital Cost	Rs. Cr./MW	4
Threshold PLF	%	80% An incentive of Rs.0.50/unit for all generation above 80% PLF should be paid by the DISCOM concerned
Auxiliary Consumption	%	10%
O&M (11 th year of operation)	% of capital cost	10.5% of original capital cost of Rs.4 crore/MW. This also works to 37% of the depreciated capital cost of Rs.1.13 crore/MW at the beginning of the 11 th year
Debt Equity ratio	Ratio	70:30
Depreciation	%	7.84% (first 8 years) 7.28% (9 th year) Balance 20% spread evenly over remaining 11 years
Interest on Debt	%	Not allowed any interest on outstanding long term debt beyond 10 th year
Return on Equity (RoE)	%	16% (MAT/Income Tax pass through)
Interest on Working Capital. The working capital comprises of the following components i. Fuel cost for one month computed at threshold PLF ii. O&M expenses for one month iii. Receivables for two months at threshold PLF iv. Maintenance spares at 1% of the project cost	%	12%
Fixed cost for biomass-based power project for 11 th to 20 th year of operation		

Description	Units	Norms
Year of Operation	Units	Fixed cost
11	Rs./Unit	1.25
12	Rs./Unit	1.31
13	Rs./Unit	1.37
14	Rs./Unit	1.43
15	Rs./Unit	1.49
16	Rs./Unit	1.56
17	Rs./Unit	1.64
18	Rs./Unit	1.71
19	Rs./Unit	1.80
20	Rs./Unit	1.89

Hon'ble APTEL Directions

1.1.4 Aggrieved by the said orders of the erstwhile APERC, the parties filed Appeals before the Hon'ble Appellate Tribunal for Electricity (APTEL) viz.,

- i) Appeal No.250 of 2014 filed by the Biomass Energy Developers Association (BEDA) & Others against the common order dated 19.07.2014
- ii) Appeal No.284 of 2014 filed by BEDA against the order dated 16.05.2014
- iii) Appeal No.297 of 2014 & I.A.No.178 of 2015 filed by the South Indian Sugar Mills Association (SISMA) & Others against the order dated 16.05.2014 and
- iv) Appeal No.42 of 2016 a cross appeal filed by APSPDCL and APEPDCL (APDISCOMs) against the common order dated 19.07.2014.

1.1.5 The Hon'ble APTEL disposed of the above appeals by judgment dated 08.03.2022. The summary of the findings in the said judgment are reproduced hereunder:

"102. the following is summarized below:

a) Variable Cost Issues for Biomass based Plants (Appeal 284)		
i.	Station Heat Rate	4500 kcal/kWh
ii.	Auxiliary consumption	10 %
iii.	Gross Calorific Value of Fuel	3300 kcal/kg
iv.	Fuel Cost	To issue revised fuel cost as per directions.
v.	Fuel Cost escalation	To issue a revised escalation index as per directions.
b) Fuel Cost Issue for Bagasse based Plants (Appeal 297)		
b		-review the fuel cost of Bagasse considering the submissions of the Appellants and the Respondents inter-alia the prevailing market price of the bagasse and landed market cost of fuel, as available, for the coal based generating stations.
c) Fixed Cost Issue as pleaded by the Appellant and the Respondents during the course of hearing (Appeal 250 & Appeal 42)		

i)	Plant Load Factor	80%
ii)	Auxiliary consumption	10%
iii)	Operation & Maintenance Expenses and escalation	As decided in the Impugned Order 2 (viz., Common Order dated 19.07.2014).

103. We also direct the State Commissions (APERC and TSERC) to initiate a study at the earliest for determining the normative parameters for Biomass and Bagasse based Power Plants under their jurisdiction and located in the State of Andhra Pradesh and Telangana and frame Tariff Regulation as per directions given in the foregoing paragraphs.
104. The appeals are allowed in part to the extent indicated above. The State Commission shall pass consequential order

1.2 CONSTITUTION OF THE COMMITTEE

1.2.1 In view of the directions of the Hon'ble APTEL, the Commission has initiated action by constituting a Committee, hereinafter referred to as 'Committee' (Appendix-I) for determining the normative parameters for Biomass-based and Bagasse-based power plants, with the following Members (One (1) member from each organization).

- i. Chief Engineer from TSTRANSCO
- ii. Chief Engineer from TSGENCO
- iii. Chief Engineer from TSSPDCL
- iv. Chief Engineer from TSNPDCL
- v. Representative from Biomass Developers Association
- vi. Representative from Telangana Sugar Mills Association
- vii. Representative from Bagasse Developers Association
- viii. Officer from TSREDCO

1.2.2 The Chief Engineer from TSNPDCL was designated as Chairperson and Project Director-WE&BM of TSREDCO as Convener of the Committee. The Committee was directed to make their recommendations within 15 days of its constitution. The broad areas of study specified to the Committee are as follows:

- Study of fuel cost for Biomass based plants.
- Study of escalation index for Biomass based plants.
- Review the fuel cost of Bagasse and prevailing market price of the Bagasse and the landed market cost of fuel, as available, for the coal based generating stations.
- Study for determination of normative parameters for Biomass and Bagasse based power plants.

1.2.3 The Convener of the Committee has communicated that letters were addressed to BEDA and the Telangana Sugar Mills Association (TESMA) on 05.11.2022

seeking the following information by 12.11.2022 i.e., before 1st Committee meeting:

- Power generation, auxiliary power, exported and imported power details from 1st January 2014 to date with self-certification.
- Fuel procurement, consumption details from 1st January 2014 to date with self-certification.
- Type of raw material and composition details from 1st January 2014 to date with self-certification.
- Audited balance sheets.
- Month-wise raw material landed cost, invoice copies from 1st January 2014 to date with self-certification.
- Fuel analysis reports from internal and external auditors, if available, provide the sample reports.
- Designed Heat and Mass Balance Diagram, (HMBD) or Turbine Curve.
- Operating HMBD details season wise or month-wise.

1.2.4 Further the Convener of the Committee sought extension of time for submission of report for determination of normative parameters for biomass-based and bagasse-based power projects stating that the developers requested to provide more time for submission of documents. Accordingly, the Commission has extended the time for submission of report upto 22.12.2022.

1.2.5 Meanwhile the Commission has filed petition before Hon'ble APTEL for extension of time for passing the consequential order.

1.3 COMMITTEE REPORT

1.3.1 The Committee has informed that the information sought was not furnished by BEDA and TESMA even after giving sufficient time by extending the timelines and thus submitted the recommendations report to the Commission on normative parameters for determining the variable component based on the information with TSREDCO previously submitted by some of the biomass-based and bagasse-based power project developers.

1.3.2 It was also stated that efforts made for obtaining key parameters and certified/ audited fuel costs related to biomass-based and bagasse-based power plants by sending emails to BEDA and SISMA and also to the individual biomass-based and bagasse-based power developers. Whereas only partial data was received from M/s Rithwik Power Projects Limited (RPPL) & M/s Shalivahana Green Energy Limited (SGEL) of biomass-based power plants.

- 1.3.3 The Committee has communicated that the observation made by them is that there are no biomass-based power plants in Telangana are operational and the Power Purchase Agreements (PPAs) with all the biomass-based power plants have come to a conclusion.

1.4 RECOMMENDATIONS OF THE COMMITTEE

- 1.4.1 The Committee has submitted their report (Appendix-II) by considering primary data shared by developers and other secondary research reports/source data to ascertain key parameters and the observations made by the Committee are as follows:

A. Biomass Plants

a) Plant Details

- 1.4.2 The two Biomass plants on whose data the study report relied on are RPPL and SGEL and the details of the plants are as given below:

Firm	RPPL	SGEL
Location	Tekulapalli Village, Penuballi Mandal, Khammam	Mancherial (Mandal & District)
Installed Capacity	6 MW	6 MW
PPA period	23.11.2002 to 22.11.2022	07.12.2002 to 06.12.2022
Tariff	As determined by the Commission	

b) Fuel Mix & Moisture

- 1.4.3 In respect of all the fuel mixes, the moisture content claimed by BEDA is not in correlation with the test results of the samples. Therefore, the Committee has relied upon CEA report and considered the moisture content on as received basis for various biomass fuels as data regarding moisture content as fired basis is not available.

c) Gross Calorific Value (GCV)

- 1.4.4 RPPL has submitted third party test report with Gross Calorific Value (GCV) of various kind of fuels. Based on the fuel mix of RPPL the GCV is assessed as 3203.84 kcal/kg. The summary of GCV reports and the assessment of GCV is detailed below:

Type of Fuel	GCV as received based on RPPL data	Fuel Mix	Proportionate GCV
Rice husk	3897	26%	1013.22
Wood Chips	4123	14%	577.22
Others/ Agri Residues	2689	60%	1613.4
Average GCV in kcal/kg			3203.84

1.4.5 GCV considered in order dated 16.05.2014 in O.P.No.32 of 2014 was 3100 kcal/kg. The Committee has considered the average GCV as 3203.84 kcal/kg.

d) Station Heat Rate (SHR)

1.4.6 The Committee has observed that there are no biomass-based power plants in operation in Telangana. The Commission has determined variable cost of Biomass-based power plants for FY 2019-20 and FY 2020-21 in O.P.No.15 of 2020 and O.P.No.21 of 2020 dated 28.08.2020 wherein, considered 4200 kcal/kWh as SHR. The same is considered by the Committee.

e) Fuel Cost

1.4.7 In response to the request of the Committee to BEDA/TSSISMA and Developers to submit the balance sheets and cash receipts for purchase of fuels, some of the developers have informed that there are no such records and balance sheets. RPPL has submitted partial data pertaining to fuel cost and based on the data of RPPL and the Hon'ble APTEL parameters the Committee has arrived at the fuel cost, as given below:

Type of fuel	Fuel Mix % (RPPL)	Qty As fired (kg) i.e., 1.36	Conversion Factor As per APTEL Order	Qty as fired	Fuel Cost with Handling (Rs/Ton)	Proportionate Price (in Rs)	Fuel Cost considered for tariff determination
	A	B=(1.36*A)/100	C	B/C			Rs/Ton
Rice husk	26	0.354	1	0.3536	2800	990.08	3181
Juliflora	37	0.503	0.75	0.67093	3000	2012.80	
Cotton Stalks	37	0.503	0.75	0.67093	2100	1408.96	
Total	100			1.71385		4059.60	

f) Market-Research

1.4.8 The Committee has further stated that it has undertaken market-research from various sources and not relied on the data submitted by RPPL for the following reasons:

- a. The data provided by RPPL was not certified by their auditor.
- b. Fuel mix varies from plant to plant.
- c. Majority of the plants use coal also as one of the fuel.

1.4.9 From the market-research from various sources it is understood that rice husk cost varies from Rs.2000/MT to 2800/MT and Juliflora varies from Rs.1700/MT to Rs.2800/MT. Coal cost for that period is taken as Rs.2850/MT including handling charges.

1.4.10 Based on the above parameters, the Committee has arrived at the fuel cost, as given below:

Type of fuel	Fuel Mix % (RPPL)	Qty As fired (kg) i.e., 1.36	Conversion Factor As per APTEL Order	Qty as fired	Fuel Cost with Handling (Rs/Ton)	Proportionate Price (in Rs)	Fuel Cost considered for tariff determination
	A	B=(1.36*A)/100	C	B/C			Rs/Ton
Rice husk	61	0.830	1.00	0.8296	2400	1991.04	2535
Juliflora	24	0.326	0.75	0.4352	2100	913.92	
Cotton Stalks	14	0.190	1.00	0.1904	2850	542.64	
Total	100			1.4552		3447.60	

1.4.11 The Committee observed that the data submitted by RPPL and SGEL is not supported with audited documents. Hence the Committee has arrived at average fuel cost based on the above two company parameters, i.e., Rs.2855/MT for the period FY 2014-15 to FY 2018-19.

g) Fuel Cost Escalation

1.4.12 Based on the data received and upon market-research the Committee has analyzed and ascertained escalation cost year-wise.

1.4.13 The observation of the Committee is that the escalation percentage is varying significantly fuel-wise. As per the TSERC orders average annual escalation for the FY 2015-16 to FY 2018-19 is 3.14%. TSERC has also approved fuel price for biomass for FY 2019-20 and FY 2020-21 to FY 2023-24, which was not challenged and attained finality. Hence any escalation allowed on base price for FY 2014-2015 shall not result in the fuel price exceeding the approved fuel price for FY 2019-20 for the past period. Hence the Committee recommended 2% escalation rate over base year price.

Summary of Normative Parameters

1.4.14 Based on the study of the Committee the Normative Parameters for Biomass plants is as follows:

Sl. No	Parameter Description	As per Commission's Order dated 16.05.2014	the Committee recommended parameters
1	Station Heat Rate	4200 kcal/kWh	4200 kcal/kWh
2	Gross Calorific Value of fuel	3100 kcal/kg	3203 kcal/kg
3	Fuel Price base year (FY 2014-15)	Rs.2843/MT	Rs.2855/MT
4	Specific Fuel Consumption	1.35 kg/kWh	1.311 kg/kWh
5	Fuel Cost Escalation		2%

B. Bagasse based power plants

a) Fuel Cost

- 1.4.15 The Committee has requested SISMA to provide actual data of fuel cost, invoices and audited accounts to arrive at the Bagasse fuel price. In response, booklets of SISMA and fuel consumption calculation from M/s Kakatiya Cement and Sugar Industries Limited (KCSIL) was received and the summary of KCSIL data is as follows:

Year	Bagasse (GCV)	Coal (GCV)	SFC kg/kWh	SHR (kcal/kWh)
2014-15	2200	3100	2.19	5044
2015-16	2150	2900	2.14	4742
2016-17	2250	3150	2.13	4929
2017-18	2100	3050	2.16	4743
2018-19	2270	2950	2.12	4971
			2.15	

- 1.4.16 SISMA and their members could not submit the invoices and full audited details for the product sold by them in the whole year.

b) Market-Research

- 1.4.17 The Committee has undertaken market-research to assess the cost of Bagasse fuel price and observed that the market prices of bagasse were not available directly as it is a byproduct of sugar mills. It is observed that the bagasse prices assessed in market-research are much lesser than that approved in APERC order dated 16.05.2014. In view of the limited availability of data in primary and secondary research, operation of Bagasse power plants not varying significantly from location to location, the Committee has considered fuel cost as Rs.1489 per tonne.

C. Normative Parameters Recommended by the Committee

- 1.4.18 Following table indicates the comparison of normative parameters made by the Committee and its recommendations.

Sl. No.	Parameter	Units	As per APERC (undivided) Order dated 16.05.2014	As per the APTEL decided in order dated 08.03.2022	As per the Committee recommendation
A. Biomass					
1	Station Heat Rate	kcal/kWh	4200	*4500	4200
2	Gross Calorific Value of fuel	kcal/kg	3100	*3300	3203
3	Fuel Price base year (FY 2014-15)	Rs/MT	2843.00	To issue revised	2855.00
4	Specific Fuel Consumption	kg/kWh	1.35	1.36	1.311
5	Fuel Cost Escalation	%	Fuel price indexation mechanism	To issue revised	2

6	Auxiliary consumption	%	10	*10	10
7	Variable cost 2014-15	Rs/kWh	4.28 (2843)	4.3075 (2843)	4.1596 (2855)
	Variable cost 2015-16		4.60 (3057)		4.2419 (2912)
	Variable cost 2016-17		4.37 (2903)		4.3266 (2970)
	Variable cost 2017-18		4.41 (2931)		4.4128 (3029)
	Variable cost 2018-19		4.7955 (3197)		4.5005 (3089)
B. Bagasse					
	Fuel Cost	Rs/MT	1551		1489.00

1.5 PUBLIC CONSULTATION PROCESS

1.5.1 The Commission based on the Committee report, has initiated public consultation process.

Public Notice

1.5.2 The Commission had issued a public notice on 01.06.2023 (Annexure-I) indicating the proposed normative parameters based on the Committee recommendations for determining the variable component of tariff for biomass and bagasse-based power plants for the period from 01.04.2014 to 31.03.2019 and invited views/objections/suggestions from interested persons/ stakeholders by 21.06.2023. It is also, indicated in the public notice that the Commission intends to conduct public hearing in the matter on 28.06.2023 in the court hall of the Commission.

1.5.3 The Public Notice was also placed on the website of the Commission along with the orders passed by the Commission on 16.05.2014 and 19.07.2014, Hon'ble APTEL Judgment dated 08.03.2022 in Appeal Nos.250 of 2014, Appeal No.284 of 2014, Appeal No.297 of 2014 & Appeal No.42 of 2016 and the Committee Report.

1.5.4 Based on the request of stakeholders the last date for submission of views/ objections/suggestions was extended to 10.07.2023 and accordingly, the public hearing has been rescheduled to 07.08.2023.

1.5.5 In addition to the above individual notices were also served to all the parties involved in the proceedings intimating the due date for submission of views/objections/suggestions and date of public hearing.

1.5.6 Following are the proposed parameters issued in the public notice:

Sl. No.	Parameter Description	Units	Proposed normative parameters
A. Biomass			
1	Station Heat Rate	kcal/kWh	4200
2	Gross Calorific Value of fuel	kcal/kg	3203
3	Fuel Price base year (FY 2014-15)	Rs/MT	2855
4	Specific Fuel Consumption	kg/kWh	1.311
5	Fuel Cost Escalation	%	2%
6	Auxiliary consumption	%	10%
B. Bagasse			
7	Fuel Cost of Bagasse based power plants	Rs/MT	1489

Response to the Public Notice

- 1.5.7 In response to the Public Notice written views/objections/suggestions were received from the three (3) stakeholders. List of the stakeholders who submitted the written views/objections/suggestions is given in Annexure-II.

Public Hearing

- 1.5.8 The Commission has conducted Public Hearing on 07.08.2023 and as the proceedings were inconclusive the public hearing was adjourned to 30.08.2023. List of the stakeholders who attended the Public Hearing is given in Annexure-III and Annexure-IV. During the Public Hearing the Commission heard the stakeholders, who wanted to be heard in person.

Chapter-2

Issues Raised by Stakeholders, Responses of the Committee and Commission's Views

2.1 O.P. NUMBER OF THE PROCEEDINGS

Stakeholders' Submissions

- 2.1.1 The notice does not state the original O.P. number of the proceedings which must necessarily be the same O.P. number from which the appeal proceedings arose resulting in a remand.

Commissions' View

- 2.1.2 The Commission taken note of the stakeholders' submission and considered the O.P.No.32 of 2014 for the present proceedings.

2.2 EXCLUSION OF AP PLANTS IN THE PRESENT PROCEEDINGS

Stakeholders' Submissions

- 2.2.1 The Commission has jurisdiction only with respect to the sale of energy by biomass plants situated within Telangana to the distribution licensees situated within Telangana. The notice has also been sent to biomass plants situated within Andhra Pradesh which are not within the jurisdiction of this Commission. The Commission may therefore forthwith withdraw the notice to biomass plants located in Andhra Pradesh and delete them from the array of parties in the present remand proceedings. Further, the Commission may ascertain completion of due service on these power plants as the addresses for some of the power plants have changed.

Commissions' View

- 2.2.2 The Commission has taken note of the stakeholders' submission and the present proceedings are applicable for biomass-based and bagasse-based power projects located in Telangana State, which are having valid power purchase agreement (PPA) with the TSDISCOM during FY 2014-15 and FY 2018-19.
- 2.2.3 The Commission has notes that the following are the biomass and bagasse - based power plants located in Telangana State during FY 2014-15 – FY 2018-19 and who are appellants in Hon'ble APTEL order dated 08.03.2022.

Biomass-based power plants

- i) M/s Gowthami Bio Energies Private Limited

- ii) M/s Rithwik Power Projects Limited
- iii) M/s Shalivahana Green Energy Limited
- iv) M/s Saro Power & Infrastructures Limited
- v) M/s Surya Teja Power Projects Private Limited

Bagasse-based power plants

- i) M/s Ganpati Sugar Industries Limited
- ii) M/s Gayatri Sugars Limited

2.3 CONSTITUTION OF THE COMMITTEE

Stakeholders' Submissions

- 2.3.1 The constitution of the Committee which is overwhelmingly dominated by State Utilities, the Committee was so constituted, ab initio, there could not be a fair, unbiased and rational functioning of such Committee. It has turned out ex-facie, the Committee was overly dominated, such an advancement of TSDISCOMs in deciding parameters for FY 2014-2019 is detriment to the biomass-based power developers. Such Committee ought not to have been constituted at all.

Commissions' View

- 2.3.2 The Commission has constituted the Committee specifying the following broad areas of study:
- Study of fuel cost for Biomass based plants.
 - Study of escalation index for Biomass based plants.
 - Review the fuel cost of Bagasse and prevailing market price of the Bagasse and the landed market cost of fuel, as available, for the coal based generating stations.
 - Study for determination of normative parameters for Biomass and Bagasse based power plants.

2.4 SCOPE OF THE COMMITTEE

Stakeholders' Submissions

The directions of Hon'ble APTEL are -

- (a) To issue revised fuel cost for FY 2014-15.
- (b) To issue revised fuel cost escalation index for FYs 2015-16 to 2018-19.
- (c) To consequently revise the variable cost for each year of the control period of FY 2014-2019

- 2.4.1 The Hon'ble APTEL has definitively decided on other operative parameters for tariff including SHR, Auxiliary consumption and GCV of Fuel for the control period of FY 2014-2019, and it is beyond the jurisdiction of this Commission to delve into such issues. The Commission cannot interfere with those definitive

findings. To the extent that the notice dated 16.06.2023 issued by the Commission purports to make proposals on SHR, GCV of fuel, specific fuel consumption and auxiliary consumption, the proceedings are without jurisdiction.

2.4.2 Further, the State Commissions were directed to initiate a study for determining normative parameters for the plants under their jurisdiction and frame Tariff Regulation. This is clearly for the purposes of the future periods and the tariff regulations framed on such study would only have prospective effect. This is a separate and distinct direction to be separately complied with respect to future plants and future periods and it cannot form part of the present remand proceedings. The directions of the Hon'ble APTEL were by way of remand only on the issues of fuel price and fuel escalation.

2.4.3 The legitimate scope of any Committee constituted by the Commission pursuant to the Judgement of the Hon'ble APTEL could only have been to make a fair, impartial and bona fide study of new biomass plants set up in Telangana so as to enable the Commission to frame tariff regulations effective prospectively. There is no indication in the scope as specified by the Commission that the Committee should concern itself with intermeddling with the decisions of the Hon'ble APTEL or with respect to the period or matters definitively decided by the Hon'ble APTEL.

2.4.4 The Hon'ble APTEL specifically directs that the Commission shall pass consequential order within 45 days of the communication of the Judgement. The stakeholder is not aware of any application made to the Hon'ble APTEL for extension of time or any order of the Hon'ble APTEL granting extension of time.

Commissions' View

2.4.5 With reference to SHR, GCV of fuel, specific fuel consumption and auxiliary consumption, the Commission finds merit in the submission of the stakeholder and the matter is discussed in Chapter-3 of this order.

2.4.6 Based on the requests made by the developers, the time for submission of report by the Committee was extended and public consultation process taken up. The same has been brought to the notice of Hon'ble APTEL.

2.5 FUNCTIONING AND PROCEEDING OF THE COMMITTEE

Stakeholders' Submissions

- 2.5.1 The stakeholder has pointed out that the Committee has not conducted the proceedings properly in the matter of sending notices, conducting meetings and recording minutes.
- 2.5.2 The Committee has mentioned that the data was submitted by the plants whereas finally the data submitted was not used for analysis and arriving at the final report.
- 2.5.3 If the Committee's suggestion of going by APERC order is taken into consideration, the question of conducting proceedings by TSERC does not arise
- 2.5.4 No records of the proceedings of the Committee and no records of the market study are made available.

Committee's Replies

- 2.5.5 TSREDCO as Member & Convenor of the Committee has sent E-mails to Biomass and Sugar Mill Associations to provide information for preparation of study report for determination of normative parameters for Biomass-based and Bagasse-based power plants. Further Member convener has called for meetings, which were conducted on 15th November 2022 and 24th December 2022 at TSREDCO Head office, Hyderabad.
- 2.5.6 However, partial data was received from RPPL and SGEL without balance sheets. Based on the data received the Committee has prepared the report. Apart from the above, no other power plants and associations have provided data to study operative parameters.

Commissions' View

- 2.5.7 The Commission has taken note of the submissions of the stakeholders and the replies of the Committee. The observations of the Commission are dealt in Chapter-3.

2.6 INSPECTION OF VARIOUS DOCUMENTS REFERRED TO IN THE REPORT

Stakeholders' Submissions

2.6.1 SGEL has pointed out that they had not submitted any such document as stated in the study report, requested copies of the alleged documents. It is also pointed out that the mail received by the Committee from SGEL is neither from the authorized person nor from an employee of SGEL. Moreover, since the company is under insolvency only the owner of the company can send any such information.

2.6.2 The BEDA requested for inspection and copies of various documents referred to in the study report and the proceedings of the Committee and there was no response from the Committee.

Commissions' View

2.6.3 The Commission has taken note of the submissions of the stakeholders.

2.7 MARKET-RESEARCH ON FUEL PRICES

Stakeholders' Submissions

2.7.1 Market research does not mean relying on data submitted by SGEL. The report purports to state that SGEL submitted third party report with respect to moisture content. No such document(s) was submitted by the Company. It is necessary that a copy of the document(s) mentioned in the document and also the source of the documents be made available to verify its veracity and to enable appropriate submissions after verification.

2.7.2 It is vaguely stated in the report that the "*the Committee has undertaken market-research from various sources*" with respect to fuel prices and fuel price escalation. As no records of the so-called market-research and the sources of information are made available, it must be inferred that no such documents exist.

2.7.3 The Committee relying on the internet-based information leads to the conclusion that they have not done a proper study.

Committee's Replies

2.7.4 The Committee undertook market research on the cost of rice husk from local vendors. They have shared the prices verbally. Hence the Committee has

considered Commission order dated 15.12.2022 in O.P.No.32 of 2014 for determination of variable cost for the period 01.04.2014 to 31.03.2019.

Commissions' View

- 2.7.5 The Commission has taken note of the submissions of the stakeholders and the replies of the Committee. The observations of the Commission are dealt in Chapter-3.

2.8 STUDY REPORT

Stakeholders' Submissions

- 2.8.1 The study report is signed only by three of several members and clearly under the domination and dictation of the Chairman/Member of TSDISCOMs and there is no reason to suspect that there were no proper meetings and proceedings of the Committee.
- 2.8.2 In study report, there is reference to "*secondary data to ascertain the moisture content....*" and there is another reference of "*other secondary research reports data*". As no such secondary data referred to it inferred that no such data exists and the study report cannot be relied upon.
- 2.8.3 With reference to moisture content of fuels, the Committee has submitted that the moisture content could not be assessed. But the stakeholder has stated that though there are no plants operating in Telangana, fuels are available and moisture content can be measured from the fuels available.
- 2.8.4 The Committee's statement that the self-certified documents are treated as audited documents is absurd. There are discrepancies in the data used by the Committee and the data reported by the Committee.
- 2.8.5 Reference is made to audited data purportedly submitted by the two companies viz., RPPL and SGEL. While SGEL informs that nothing of the sort was submitted by them, RPPL states that there was no mention of audit data submitted by them. As no copy of the specific document with so-called audited data purportedly relied upon by the Committee is made available, it must be inferred that no such document exists, and the authenticity, veracity and contents of the study report is called into serious question.

2.8.6 Study report refers to "BEDA submission data", whereas no such data was submitted by BEDA.

2.8.7 The report of the Committee is further inconsistent in the following:

- a) The Committee ought not to have gone into the operational parameters of plants established as far back as in 2004 where the operational parameters of such plants have already been decided by the Hon'ble APTEL in Judgement dated 20.12.2012 and by Judgement dated 08.03.2022. It is a serious misdirection which cannot even be considered as bonafide. The Committee, in any case, ought to have confined itself to new plants alone.
- b) In so far as the Committee purports to dabble with the station heat rate and GCV of existing old power plants, the report is to be wholly ignored. Accordingly, they refrained from addressing these aspects except where necessary incidentally to show the inconsistent, and arbitrary approach of the Committee.
- c) The study report says that the Committee has considered the fuel mix as per the CEA report. However, the study report, inconsistently considers different fuel mix while computing the fuel cost. The same inconsistency is evident even with respect to GCV.
- d) It is stated that moisture content in as received condition is taken as per CEA report. CEA report nowhere specifically gives the moisture in as received condition for specific categories of biomass fuels. It only makes a passing observation that the woody biomass and agricultural residues can be as high as 40%. The study report goes on to state that the data regarding moisture content in as fired condition is not available anywhere. The moisture content in as fired condition is 'in fact' stated in CEA report. The Committee incorrectly takes the moisture content of rice husk.
- e) The study report states that the fuel cost is arrived at on RPPL data and APTEL parameters.
- f) The values of fuel mix are not what has been given by RPPL as already stated supra. The conversion factor is wrongly taken as 0.75 instead of 0.47. It is wrongly stated as "Qty as fired" instead of "Qty as received".

The prices mentioned in the study report are the prices mentioned by RPPL as determined in the previous ERC order based on the then KPMG study report. Having computed the total of proportionate price as Rs 4059.60, it is incomprehensible as to how the figure of 3181 is arrived. The fuel mix indicated is arbitrary as SGEL informs that they have not given any such data. Having referred to audited data, the study report curiously states that the data submitted is not supported by audited documents. The approach of the Committee is wholly inconsistent.

g) With respect to fuel cost escalation, the consideration of coal is irrelevant. The various comments in the study report are without relevance and application. The alleged source for the data are denied as SGEL has informed that they have not furnished any such data. The reasoning given for recommending escalation of 2% is arbitrary and irrational. It cannot be any limitation on the escalation to be allowed for a previous period on the basis of a normative index.

2.8.8 The Commission has issued notice with proposals on the basis of the impeached study report and included matters and also parties beyond the legitimate and limited jurisdiction of the Commission in the proceedings upon limited remand from the Hon'ble APTEL.

2.8.9 The Commission can obtain the required information from the developers directly instead of the Associations, make a study for fuel prices, moisture content etc., like APERC has done and issue the consequential order.

2.8.10 TSDISCOMs have proposed the following parameters for consideration by the Commission:

Sl. No.	Parameter Description	units	Proposed normative parameters	Remarks
A. Biomass				
1	Station Heat Rate	kcal/kWh	4200	No comment
2	Gross Calorific Value of fuel	kcal/kg	3203	No comment
3	Fuel Price base year (FY 2014-15)	Rs/MT	Rs.2855/-	Rs.2501/-*
4	Specific Fuel Consumption	kg/kWh	1.311	1.25**
5	Fuel Cost Escalation	%	2%	No comment

Sl. No.	Parameter Description	units	Proposed normative parameters	Remarks
6	Auxiliary consumption	%	10%	No comment
B. Bagasse				
7	Fuel Cost of Bagasse based power plants	Rs/ MT	Rs.1489/-	Rs.1412/-*
* Based on the average of CERC normative parameters for the period from 2014-15 to 2018-19				
** As per CERC normative parameter				

Committee's Replies

- 2.8.11 RPPL has submitted documents vide email dated 18.11.2022 and 26.12.2022, which were considered as self-certified documents.
- 2.8.12 SGEL has been submitting the yearly power and fuel consumption details to TSREDCO, which is State Nodal Agency (SNA) for Telangana State for allotment of coal from SCCL. Hence the Committee has considered the fuel mix data of SGEL for preparation of the report. The submitted documents are considered as "Self-certified documents".
- 2.8.13 As per the observation of the Committee self-certification is considered as Audited data.
- 2.8.14 Regarding BEDA submission on moisture content, RPPL has submitted test reports of moisture content of fuel for the year 2021. The data for moisture content in as fired condition is not available and the Committee has considered recent APERC Order in O.P.No.32 of 2014 dated 15.12.2022 for determination of variable cost for the period 01.04.2014 to 31.03.2019.
- 2.8.15 No Biomass-based power plant is in operation at the time of study and the Committee was not able to assess the moisture level of that fuels they were procuring. Hence the study reports of CEA/CERC and APERC and other web related information was considered for moisture content of biomass fuels.
- 2.8.16 Details of fuel cost of RPPL and SGEL was received on 18.11.2022 and 03.01.2023. The data provided by vendors is not supported with balance sheet.

Commissions' View

- 2.8.17 The Commission has taken note of the submissions of the stakeholders and the replies of the Committee. The observations of the Commission are dealt in Chapter-3.

Chapter-3

Analysis and Conclusions

3.1 COMMISSION'S OBSERVATION ON THE COMMITTEE REPORT

3.1.1 Based on the arguments presented by the stakeholders in the public hearing and perusal of the Committee report, the Commission has observed the following:

- Though the Committee has sought information from the members of the Committee, the members i.e., Biomass and Bagasse developers were not informed about the proceedings of meetings.
- The Committee has not made available to some of the members, the data received and used for finalization of report.
- The Committee has not recorded the minutes of meetings held.
- The Committee has finalized the report based on the partial data received.
- Some numerical have crept in the Committee report.

3.1.2 In view of the above, the Commission has not relied on the recommendations of the Committee for the fuel cost of biomass-based power plants and decided to seek information from the Appellants.

3.2 FUEL COST AND FUEL COST ESCALATION OF BIOMASS-BASED POWER PLANTS

3.2.1 The Commission sought the following information directly from the Appellants vide letter dated 30.08.2023 to ascertain the fuel price of biomass-based power plant for the period FY 2014-15 to FY 2018-19:

- Balance sheets and Audited Accounts for the period from FY 2014-15 to FY 2018-19.
- Nature of fuel mix.
- Mode of Transportation of fuels and Transportation cost payment with supporting documents like receipts, cash vouchers, cheque details.
- Month wise Quantum of each item of fuel in the above fuel mix and Fuel price.
- Month wise Fuel Purchase bills/invoices for the period from FY 2014-15 to FY 2018-19 with the supporting documents like receipts, cash vouchers, cheque details, Bank Accounts Statements.
- Monthly test reports for fuel both in-house and External agencies.
- Month wise details of other expenses if any with supporting documents like receipts, cash vouchers, cheque details.
- In case coal is used as fuel, month wise details of allotment, Grade, Quantity, Price.
- Month wise Generation details.

3.2.2 In response, STPPPL has communicated that data is not available for the period FY 2014-15 to FY 2018-19 as they have taken over the company in FY 2019-20 and the data sought is for the period prior to taking over.

3.2.3 There is no response from other appellants except RPPL and SGEL. To expedite the process of issuing consequential order, the Commission once again sent mails communicating and directing the appellants to submit the information immediately, subsequently BEDA have furnished information. The information sought and information furnished by RPPL, SGEL and BEDA is detailed below:

Sl. No	Information sought	Information furnished		
		RPPL	SGEL	BEDA
1	Balance sheets and Audited Accounts for the period from FY 2014-15 to FY 2018-19	Auditor certificate for 2014-15	Balance sheet for 2014-15 for their 3 units at different locations	Not furnished
2	Nature of fuel mix	CA certified document furnished for 2014-15	Not furnished	furnished for 2014-15 without auditor certificate
3	Mode of Transportation of fuels and Transportation cost payment with supporting documents like receipts, cash vouchers, cheque details	not furnished	not furnished	not furnished
4	Month wise Quantum of each item of fuel in the above fuel mix and Fuel price	Month wise details not furnished whereas quantum and fuel price was furnished for 2014-15 certified by the auditor	not furnished	Month wise details not furnished whereas fuel price was furnished for 2014-15 which is not certified by the auditor
5	Month wise Fuel Purchase bills/invoices for the period from FY 2014-15 to FY 2018-19 with the supporting documents like receipts, cash vouchers, cheque	not furnished	not furnished	not furnished

Sl. No	Information sought	Information furnished		
		RPPL	SGEL	BEDA
	details, Bank Accounts Statements			
6	Monthly test reports for fuel both in-house and External agencies	not furnished	not furnished	not furnished
7	Month wise details of Other expenses if any with supporting documents like receipts, cash vouchers, cheque details	not furnished	not furnished	not furnished
8	In case coal is used as fuel, month wise details of allotment, Grade, Quantity, Price	not furnished	not furnished	not furnished
9	Month wise Generation details	not furnished	not furnished	not furnished

3.2.4 The details of the information furnished by RPPL, SGEL and BEDA for arriving at the fuel price are as follows:

Description	RPPL	SGEL	BEDA
Fuel Mix			
Rice Husk	27.80%	Not furnished information	36.80%
Woody Biomass (Juliflora)	28.12%		42.90%
Agriculture Residues	44.08%		20.30%
Moisture Content			
Rice Husk	20%	Not furnished information	20%
Woody Biomass (Juliflora)	40%		40%
Agriculture Residues	60%		60%
Conversion Factor			
Rice Husk	As per methodology adopted in APTEL judgement	Not furnished information	1.00
Woody Biomass (Juliflora)			0.75
Agriculture Residues			0.47
Fuel Price (Rs/MT)			
Rice Husk	2838.83	Not furnished information	2800.00
Woody Biomass (Juliflora)	2319.90		2300.00
Agriculture Residues	1417.84		1500.00
Description			
Fuel price escalation	5%	Not furnished information	5%

Commission's Analysis

- 3.2.5 The Commission has given an opportunity to the biomass-based power developers to furnish the actual prices to arrive at the fuel cost and actual escalation factor. Only RPPL, SGEL and BEDA have furnished certain partial information, but the information furnished is related to FY 2014-15 only.
- 3.2.6 Since, no authenticated information is available to arrive at the fuel cost and escalation factor, the Commission has decided to obtain the Financial Statements/Annual Reports of all the biomass-based power plant pertaining to Telangana from the website of Ministry of Corporate Affairs (www.mca.gov.in) and the generation details from TSDISCOMs/TSSLDC for the period from FY 2014-15 to FY 2018-19.

Individual plant-wise, year-wise data obtained from official website of MCA and TSDISCOMs/TSSLDC

- 3.2.7 The details of fuel cost (cost of materials consumed) obtained for individual biomass-based plants from the website of Ministry of Corporate Affairs (MCA), and plant-wise, year-wise the generation particulars received from TSDISCOMs/TSSLDC and accordingly, the plant-wise fuel cost in Rs./MT and escalation factor arrived at is shown below:

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
M/s Rithwik power projects Limited					
Cost of materials and stores consumed					
Inventory at the beginning of the year (Rupees)	1,00,72,541	65,00,846	68,50,612	1,83,84,504	2,11,14,156
Add: Purchases(Rupees)	19,55,58,350	18,08,63,269	17,80,24,554	16,86,95,820	15,56,84,712
Less: Inventory at the end of the year(Rupees)	65,00,846	68,50,612	1,83,84,504	2,11,14,156	33,62,817
Cost of materials consumed(Rupees)	19,91,30,045	18,05,13,504	16,52,16,162	16,22,96,868	17,34,36,051
Energy Generated in Units as per SLDC	42396740	38964800	39103200	38054480	38448680
Variable Cost in Rs/unit	4.70	4.63	4.23	4.26	4.51
Fuel Cost in Rs per MT	3099.90	3057.60	2788.59	2814.80	2977.16
Increase/decrease in Fuel Cost		-1.36%	-8.80%	0.94%	5.77%
M/s Gowthami Bio Energies Private Limited					
Cost of materials consumed in Rupees	15,11,11,731	19,43,06,971	13,18,33,037	12,89,30,078	13,62,16,941
Energy Generated in Units as per SLDC	42453300	47049060	41062920	44152920	41951580
Variable Cost in Rs/unit	3.56	4.13	3.21	2.92	3.25
Fuel Cost in Rs per MT	2349.26	2725.72	2118.94	1927.25	2143.02
Increase/decrease in Fuel Cost		16.02%	-22.26%	-9.05%	11.20%
M/s Surya Teja Power Projects Private Limited					
Cost of materials consumed in Rupees	10,75,39,379	18,66,58,497	12,14,21,949	11,87,75,777	11,58,28,483

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Energy Generated in Units as per SLDC	23881090	32674071	27155993	27308249	22623799
Variable Cost in Rs/unit	4.50	5.71	4.47	4.35	5.12
Fuel Cost in Rs per MT	2972.06	3770.41	2951.04	2870.63	3379.04
Increase/decrease in Fuel Cost		26.86%	-21.73%	-2.72%	17.71%
M/s Saro Power and Infrastructure Limited					
Cost of materials consumed in Rupees	28715169	22185964	69397395	27364694	1341708
Energy Generated in Units as per SLDC	8272200	1700400	15339500	5378100	530300
Variable Cost in Rs/unit	3.47	13.05	4.52	5.09	2.53
Fuel Cost in Rs per MT	2291.05	8611.35	2985.90	3358.19	1669.86
Increase/decrease in Fuel Cost		275.87%	-65.33%	12.47%	-50.28%
M/s Shalivahana Green Energy Limited					
Cost of materials consumed in Rupees	222594927	563431221	680859846	567356863	593736679
Energy Generated in Units as per SLDC	29306000	36334420	29024810	29854190	30416150
Variable Cost in Rs/unit	7.60	15.51	23.46	19.00	19.52
Fuel Cost in Rs per MT	5013.06	10234.50	15482.19	12542.81	12883.49
Increase/decrease in Fuel Cost		104.16%	51.27%	-18.99%	2.72%

- 3.2.8 It is also verified that in respect of RPPL, the auditor certified data for the fuel purchase for FY 2014-15 is exactly matching with the data obtained from official website of Ministry of Corporate Affairs. Hence the Commission has relied on the data obtained from the MCA website.
- 3.2.9 The Commission has observed that the data received for SGEL pertains to more than One unit at different locations, hence is not considered for analysis.
- 3.2.10 Further, the generation and fuel cost data of M/s Saro Power & Infrastructure Limited shows wide variations and not correlated with others, hence it is also not considered for further analysis in arriving biomass fuel cost and fuel cost escalation.
- 3.2.11 Therefore, in order to have a true reflection of the fuel cost and fuel cost escalation, the Commission has decided to take year-wise average of the actual fuel cost of the three plants viz., RPPL, M/s Gowthami Bio Energies Private Limited and M/s Surya Teja Power Projects Private Limited, as detailed below:

Particulars		2014-15	2015-16	2016-17	2017-18	2018-19
Cost of materials consumed in Rupees	A	457781155	561478972	418471148	410002723	425481475
Energy Generated in Units	B	108731130	118687931	107322113	109515649	103024059
Variable Cost in Rs/unit	C=(A/B)	4.21	4.73	3.90	3.74	4.13
Auxiliary consumption	D	10%	10%	10%	10%	10%
Specific Fuel Consumption kg per kWh	E	1.36	1.36	1.36	1.36	1.36
Fuel cost in Rs/MT	F=(C/E*(1-D)*1000)	2778.74	3122.27	2573.48	2470.90	2725.75

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
% increase in Fuel cost		12.36%	-17.58%	-3.99%	10.31%

3.2.12 Based on actual consumption of fuel, year-on-year, the Commission determines biomass fuel price and escalation factor for the period FY 2014-15 to FY 2018-19 as shown in the table below:

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Fuel cost in Rs/MT	2778.74	3122.27	2573.48	2470.90	2725.75
% increase in Fuel cost		12.36%	-17.58%	-3.99%	10.31%

Variable Cost per unit:

3.2.13 The norms fixed by Hon'ble APTEL in its Judgement dated 08.03.2022 vis a vis the norms approved by the Commission in its order dated 16.05.2014 and the fuel cost and escalation factor as determined in this order are given in the table below:

Sl. No	Parameter Description	Units	As per Hon'ble APTEL Judgement	As per the Commission's Order	As per this order
1	Station Heat Rate	kcal/kWh	4500	4200	4500
2	Auxiliary consumption	%	10	10	10
3	Gross Calorific Value of fuel	kcal/kg	3300	3100	3300
4	Fuel Price base year (FY 2014-15)	Rs. per MT		2843	2778.74
5	Fuel price escalation			Fuel price (escalation as per indexation method)	Fuel Price (escalation as per actuals)
	FY 2015-16			3057 (7.53%)	3122.27 (12.36%)
	FY 2016-17			2903 (-5.02%)	2573.48 (-17.58%)
	FY 2017-18			2931 (0.95%)	2470.90 (-3.99%)
	FY 2018-19			3197 (9.08%)	2725.75 (10.31%)
6	Specific Fuel Consumption:	kg/kWh	1.36	1.35	1.36

3.2.14 By considering the norms fixed by Hon'ble APTEL and fuel cost and escalation factors as determined in this order, the variable cost per unit is computed for Biomass power projects for the period from FY 2014-15 to FY 2018-19 as shown in the table below:

Financial Year	Variable Cost (Rs/Unit)
2014-15	4.21
2015-16	4.73
2016-17	3.90
2017-18	3.74
2018-19	4.13

3.2.15 Accordingly, TSDISCOMS are directed to reconcile and regularize the payments against the invoices raised by biomass-based power plants for

FY 2014-15 to FY 2018-19 based on the above rates within forty-five (45) days from the date of this Order.

3.3 REVIEW OF BAGASSE PRICE

3.3.1 Observations of Hon'ble APTEL in the judgement dated 08.03.2022 on the fuel cost for Bagasse-based power plants are as under:

“The Commission in its order dated 16.05.2014 has determined Rs.1,551 per ton as the cost of Bagasse which is much higher than Rs.1,281 per ton as proposed in the consultation paper. The SISMA sought a price of at least Rs. 1,950/tonne without substantiating the same with evidence in support of it which is 21 % higher than what was proposed by the Commission in the consultation paper. The broad principles and approach adopted for determining variable tariff for particular control period must not be varied unless it is proved beyond doubt that the existing approach would be contrary to the principles laid down in the Electricity Act, 2003. The Commission has consistently been adopting the 'heat value approach' by linking Bagasse price to the price of landed cost of coal for thermal power plants also adopted by CERC. Also approach of linking Biomass price to arrive at the cost of Bagasse has been rejected by this Tribunal in its Judgement dated 20.12.2012 and approved the cost of fuel determined by the Commission for FY 2004-2009 based on heat value approach by linking bagasse price to the landed cost of domestic coal.”

3.3.2 The Hon'ble APTEL has also directed this Commission to review the bagasse price based on the submission of the appellants and respondents with reference to the prevailing market price of the bagasse and the landed market cost of fuel, as available, for the coal based generating stations.

3.3.3 In view of the observations of the Commission on the proceedings of the Committee, based on the views/objections of the stakeholders in response to the public notice and also arguments presented by the stakeholders in the public hearing, the Commission has decided not to rely on the recommendations of the Committee.

Submission of the Appellants and Respondents

3.3.4 There is no response from any of the bagasse-based power developers or SISMA to the public notice. TSSPDCL is alone responded to the public notice with regard to fuel cost of bagasse-based power plant, and submitted to consider the fuel price for bagasse-based power plant at Rs.1412/MT for FY 2014-15 (as against proposed and the Committee recommended price of Rs.1489/MT) based on the average of CERC normative parameters for the

period FY 2014-15 to FY 2018-19. The Commission opines that the approach adopted by TSSPDCL is not substantive in nature for applicability and hence not taken into consideration.

3.3.5 Therefore, to ascertain the fuel price of bagasse-based power plant, the Commission vide letter dated 30.08.2023 has sought the following information directly from the Bagasse-based power developers and South Indian Sugar Mills Association (SISMA) for the period FY 2014-15 to FY 2018-19.

- Balance sheets and Audited Accounts for the period from FY 2014-15 to FY 2018-19.
- Mode of Transportation of fuels and Transportation cost payment with supporting documents like receipts, cash vouchers, cheque details.
- Month wise Quantum of fuel and Fuel price.
- Month wise Fuel Purchase bills/invoices for the period from FY 2014-15 to FY 2018-19 with the supporting documents like receipts, cash vouchers, cheque details, Bank Accounts Statements.
- Monthly test reports for fuel both in-house and External agencies.
- Month wise details of other expenses if any with supporting documents like receipts, cash vouchers, cheque details.
- In case coal is used as fuel, month wise details of allotment, Grade, Quantity, Price.
- Month wise Generation details.

3.3.6 In spite of giving an opportunity, no information was received from the bagasse-based power developers or SISMA.

Prevailing Market Price of Bagasse

3.3.7 The Bagasse is a by-product of sugarcane crushing while manufacturing sugar. The market price of bagasse is not available directly as they are not regulated. In this regard CERC explanation in the Statement of Reason (SOR) with regard to Bagasse price for FY 2017-18 and FY 2018-19 for CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017 is reproduced below:

“... .. Some stakeholders have proposed to increase the price of fuel cost. However, there are views that there should not be any provision for fuel cost for bagasse-based co-generation plants as Bagasse is a by-product of sugarcane crushing while manufacturing sugar and this cost is already included by the State Governments in sugar pricing.

The Commission is of the view that fuel prices should be considered for Bagasse based cogeneration plants for the purpose of tariff determination.”

Commission's View

- 3.3.8 The Commission is of the view that there are no sufficient ingredients to review the price of bagasse-based projects for FY 2014-15 and decided to retain bagasse price as specified in O.P.No.32 of 2014 dated 16.05.2014 for FY 2014-15 for the purpose of tariff determination as given below:

Particulars	As specified in Commission's Order dated 16.05.2014	As approved in this Order
Bagasse price (Rs/MT)	1551.00	1551.00

3.4 DETERMINATION OF NORMS

- 3.4.1 The Commission has already determined the tariff for Biomass-based and Bagasse-based power plants for the control period FY 2014-15 to FY 2018-19 and FY 2019-20 to FY 2023-24, and the PPAs of most of these power plants have already expired and others nearing end of their term. The Commission intends to undertake a detailed study in line with the Hon'ble APTEL directions to determine the normative parameters for Biomass-based and Bagasse-based power plants, taking into account the current status of existing power plants and upcoming initiatives in Telangana State.

Accordingly, the original petition stands disposed of.

This Order is corrected and signed on this the 9th day of November, 2023.

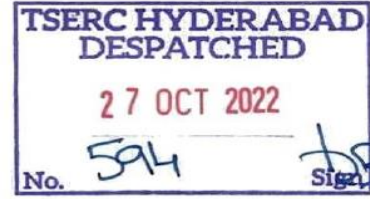
Sd/-
(BANDARU KRISHNAIAH) MEMBER

Sd/-
(M. D. MANOHAR RAJU) MEMBER

Sd/-
(T. SRIRANGA RAO) CHAIRMAN

//CERTIFIED COPY//

Appendix-I
Constitution of the Committee



**TELANGANA STATE ELECTRICITY REGULATORY
COMMISSION**

From
Secretary (FAC)
TSERC,
#11-4-660, 5th Floor,
Singareni Bhavan, Red Hills,
Hyderabad – 500004.

To
Sri T. Madhusudan,
TSNPDCL, H.No.2-5-31/2,
Corporate Office, Vidyut Bhavan,
Nakkalagutta, Warangal - 506001

Lr.No.TSERC/Secy/JD(TE)/OSD(TE)/F.No.APTEL /D.NO. 594 /22, Dt. 27
10.2022

Sir,

Sub:- TSERC – Study Committee for determination of normative parameters for Biomass and Bagasse based power plants in compliance of APTEL order – communication of approval of Study Committee -Reg.

Ref:- 1. APTEL Order in Appeal No. 250 of 2014, Appeal No. 284 of 2014, Appeal No. 297 of 2014 & IS No. 178 of 2015 & Appeal No. 42 of 2016, Dated: 08.03.2022.
2. Lr.No.TSERC/Secy/JD(TE)/OSD(TE)/F.No./D.NO. 491/22, Dt.03.09.2022

With reference to the above subject matter, I am directed by the Commission to

Inform you the following:

The Commission accorded the approval for the committee consisting of Chairperson, Convener and members as per the list enclosed, for study of normative parameters for biomass and bagasse based power plants located in Telangana.

Commission also directs Chairperson of the study committee to submit the recommendations within 15 days from the receipt of this letter.

The broad areas of work for recommendations of the Committee shall be as follows:

- a. Study of fuel cost for Biomass based plants.
- b. Study of escalation index for Biomass based plants.
- c. Review the fuel cost of Bagasse and prevailing market price of the

Bagasse and the landed market cost of fuel, as available, for the coal based generating stations.

- d. Study for determination of normative parameters for Biomass and Bagasse based power plants.

Yours Faithfully


Commission Secretary [34c]

Encl as above:

Copy to

Convenor and Members of the study committee
Peechi CMD - TSSPDCL & TSNPDCL
PO to O/o Chairman

PS to Member – Technical

PS to Member – Finance

Approved Study Committee:

Proposed Committee for study of normative parameters for Biomass and Bagasse based power plants located in Telangana				
Sl.No	Chairperson/ Convenor/ Member	Name	Designation	Name of the Organization
1	Chairperson	Sri T. Madhusudan	CGM/RAC	TSNPDCL
2	Convenor	Sri T. Srinivasulu	Project Director- WE & BM	TSREDCO
3	Member	-	Chief Engineer	TS Transco
4	Member	-	Chief Engineer	TS Genco
5	Member	Sri Ch. Chakrapani	CGM/RAC	TSSPDCL
6	<u>Member</u>		<u>One</u> representative	<u>Biomass Developers</u> <u>Association</u>
7	Member	Sri Phani Raj	Sr. Manager (power plant)	M/s Kakatiya Cement, sugars and Industries Ltd.(nominated by Telangana Sugar Mills Association)
8	Member	Mr.Y. Kotaiah	CGM (Operations)	M/s Madhucon Sugar and Power Industries Ltd.on behalf of Bagasse Energy Developers Association)

Appendix-II the Committee Report



తెలంగాణ రాష్ట్ర పునరుద్ధరణ యొక్క ఇంధన వనరుల అభివృద్ధి సంస్థ లిమిటెడ్

Telangana State Renewable Energy Development Corporation Ltd.

(A State Govt. Company)

D.No.6-2-910, Visvesvaraya Bhavan, The Institution of Engineers Building,
Khairatabad, Hyderabad - 500 004, Telangana, India.

Tel: (Off) 040-23201502, 23201503, Fax: 040-23201504

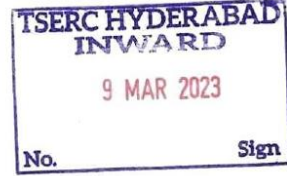
Website: www.tsredco.telangana.gov.in

Email: info@tsredco.telangana.gov.in

Ref: TSREDCO/Biomass/TSERC/2022-23 / 1120

Date: 08/03/2023

To
The Secretary (FAC)
Telangana State Energy Regulatory Commission (TSERC)
#11-4-660, 5th Floor,
Singareni Bhavan, Redhills
Hyderabad



Sir,

Sub: TSREDCO- Study for Determining the Normative Parameters for Biomass & Bagasse Based Power projects located in Telangana state- submission of Final Report- Reg

Ref: 1) Letter No: TSERC/ Secy/JD(TE)/OSD(TE)/E.No/D.No594/22 dated 27.10.2022
2) Letter No: TSERC/ Secy/JD(TE)/OSD(TE)/D.No 654/22 dated 22.11.2022

With reference to the 2nd cited above, I am herewith submitting the 3sets of signed final study report for Determining the Normative Parameters for Biomass & Bagasse Based Power projects located in Telangana state for the period 2014-2019.

The above study report submitted for your information

Thanking you sir

Encl: A/a

Yours faithfully


T. Srihuivasulu
Member Convener

Copy Submitted to:

- 1) The Committee Members
- 2) VC&MD, TSREDCO

Renewable Energy for Rural Development

Report of the Members of the Committee to Study Normative Parameters for
Biomass and Bagasse based Power Plants Located in Telangana

The members of the committee constituted by Hon'ble TSERC has verified the documents supported by developers and based on secondary source of data to ascertain the moisture content of the Biomass fuels, Gross Calorific values and fuel costs & escalation parameters for the fuels used in the Biomass & Bagasse power plants in pursuance of the directions issued by the Commission.

In continuation to that, committee communicated the Emails to Biomass/Sugar mills Developers association and individual Biomass & bagasse Power plants to submit the key parameters and certified/audited Fuelcosts related to Biomass and Bagasse power plants. In response we have received partial response from M/s Rithwik Power Projects Limited(RPPL) & M/s Shalivahana Green Energy Limited plants. It is further submitting that as all Biomass plants in the Telangana are not in operation and PPA expired all Biomass power projects in Telangana state. Due to paucity of time, In view of this the committee has made best efforts to ascertain key parameters from primary data shared by Developers and other secondary research reports/source data.

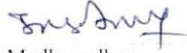


A. Fuel Mix:

RPPL is a public limited company which has a factory at Tekulapalli Village, Penuballi Mandal, Khammam. The plant is a biomass-based power plant with an installed capacity of 6 MW. The company entered into a PPA with the TS DISCOM to sell the power as per tariff determined by the Hon'ble Commission, TSERC. COD of the plant is 23.11.2002 and the PPA expired on 22.11.2022.

The power plant uses Rice Husk, Woody Biomass (Juliflora and Subabul) and other Agri Residues as a fuel to generate power. The fuel is fed to the boiler through bunkers which act as storage buffers, whereas Woody Biomass and Cotton Stalks are fed directly into the boiler. The Woody Biomass and Cotton Stalks are chopped into small pieces before being fed into the boiler.

The company submitted the below mentioned self certified fuel mix in year wise.

Type of fuel	Fuel Mix%		
	Rice Husk	Juliflora	Other biomass
2014-15	25%	14%	61%

		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convenor

	2015-16	27%	14%	59%
	2016-17	29%	15%	56%
	2017-18	25%	13%	61%
	2018-19	23%	15%	62%
	Average	26%	14%	60%

Based on above data it is assessed that, on average of 5 years data it is noted that following fuel mix used in RPPL, Rice Husk (about 26%), wood waste (14%) and Other Agro waste (60%) in the Boiler. Rice Husk, Juliflora and Cotton Stalks are available from January to August, December to July and January to April respectively. The sellers bring the Rice Husk to the plant in lorries and unload it in the yard whereas the agents/farmers transport Woody Biomass to the plant by lorries/tractors where it is directly unloaded into the machines, chopped into pieces and stored in the yard to be dried naturally for later use.

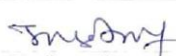


Further, 2nd Project SGEL is a public limited company which has a factory at Mancheial (M&Dist). The plant is a biomass-based power plant with an installed capacity of 6 MW. The company entered into a PPA with the TS DISCOM to sell the power as per tariff determined by the Hon'ble Commission, TSERC. COD of the plant is 07.12.2002 and the PPA expired on 06.12.2022.

The power plant uses Rice Husk, other Agri Residues and coal as a fuel to generate power. The fuels are fed to the boiler through bunkers which act as storage buffers. The Other biomass are chopped into small pieces before being fed into the boiler.

The company submitted the below mentioned self certified fuel mix in year wise.

Type of fuel	Fuel Mix%		
	Rice Husk	Other biomass	coal
2014-15	64.16%	21.68%	14.16%
2015-16	54.9%	30.0%	15.1%
2016-17	54.9%	30.0%	15.1%
2017-18	63.15%	23.43%	13.42%
2018-19	60.43%	25.04%	14.53%
Average	59.51%	26.05%	14.45%

Based on above data it is assessed that, on average of 5 years data it is noted that following fuel mix used in SGEL, **Rice Husk (about 60%), Other Biomass (26%) and Coal (14%) in the Boiler.** Rice Husk, Juliflora and Cotton Stalks are available from January to August, December to July and January to April respectively. The sellers bring the Rice

		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convener



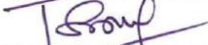
Husk to the plant in lorries and unload it in the yard whereas the agents/farmers transport Woody Biomass to the plant by lorries/tractors where it is directly unloaded into the machines, chopped into pieces and stored in the yard to be dried naturally for later use.

The Committee carefully examined the submission of the BEDA data & others for fuel mix; it is observed that as fuel supplies to biomass power plants completely is unorganized sector and there are no proper evidential documents on fuel price and fuel mix sources in supplier wise. As fuel mix varies significantly in season wise and geographical region. As power plants are located in different regions in Telangana, it is difficult to ascertain single fuel mix for entire region.

Different varieties of biomass fuels are used for generating power as it is noted that biomass/bagasse power companies are completely in unorganised, as highlighted by the CEA vide its report dated September 2005. Hence the Committee requested all the biomass developers and Baggasse based power projects to submit the data. RPPL.&SGEL which are two among the five plants in recent past operation to submit the audited data of biomass fuels for FY 2014-15. Accordingly, RPPL.& SGEL furnished the audited data. Based on the audited data so submitted, the committee computed the mix percentages of various biomass fuels used by RPPL.&SGEL's Biomass power plant as given in the table below:

The Committee compared the above fuel mix percentages with the fuel mix percentages specified in CEA report and this APERC Commission's order dated 16.05.2014 and two power plants as shown below:

Type of fuel	Fuel Mix% as per data of RPPL	Fuel mix % as per SGEL	Fuel Mix% as per data of CEA	Fuel Mix % considered in APERC Commission's order dt 16.05.2014
Rice Husk	26%	60%	36.8%	56%
Juliflora	14%	-	42.9%	24%
Other biomass/ Agro residues	60%	26%	20.3%	20%
Coal		14%		
Total	100%	100%	100%	100%

		
T. Madhusudhan CGM(IPC&RAC), TSNDPCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convenor

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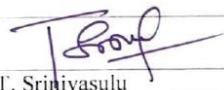
After careful examination of the data, the fuel mix are not matching with respective plants as well as commission data. Further, the fuel mix will vary from year to year and season to season. Therefore, the Committee is not inclined to consider data submitted by RPPL & SGEL, hence committee has considered the fuel mix as per CEA report.

B. Moisture content:

It is to submit that, as submitted in earlier paragraphs that all biomass power plants are not in operation, it is difficult to ascertain moisture content physically. It is to be noted that, based on the sample reports submitted by the above companies, the moisture content varied from time to time. In their latest submissions, they requested to consider the moisture content as 11.21% for Rice Husk, 16.35% for Other biomass/Agro residues and coal is 15.93% for as Received basis from third party reports submitted by SGEL and 14.48% for Rice Husk, 34.54% for wood chips and other Biomass residues i.e., Palmoil bunches 40%, palmoil fiber 29.3% and 5.93% for Maize cobs as Received basis from third party reports submitted by RPPL. The moisture content of palmoil bunches samples is higher compared to that mentioned in the CEA Report, 2005 and the submissions of SGEL & RPPL. The Committee examined the matter carefully and compared the moisture content as shown in the table below:

	BEDA submission data			CEA report			SGEL			RPPL		
	Rice Husk	Cotton Stalk	Juliflora/ wood chips	Rice Husk	Cotton Stalk	Juliflora	Rice Husk	Other biomass	coal	Rice Husk	wood chips	Palmoil bunches
Moisture in as-received condition (%)	3.89	55	10.25	0	40	40	11.21 %	15.93 %	15.9 3%	14.48 %	40%	29.3%
Moisture in as-fired condition (%)	0	15	20	0	15	20	Not submitted			Not submitted		

In respect of all the fuel mixes, the moisture content claimed by BEDA and the test results of the samples shown in the above table not matching, not in correlation with the claim of the BEDA. Therefore, the committee is inclined to consider the moisture content in as received basis for various biomass fuels as per CEA report. The data regarding moisture

		
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content as fired basis is not available anywhere. Hence, the committee has considered the CEA data.

C. GROSS CALAROFIC VALUE:

Commission in its order in OP No.32 of 2014 has issued Gross Calorific value of 3100 Kcal/kg ; in present scenario RPPL has submitted third party test report Gross calorific values of various kind of fuels. Here is summary of GCV reports and based on fuel mix of RPPL; gross calorific value is assessed as 3204 kcal/kg.

	GCV As Received based on RPPL Data	Fuel Mix	Proportionate GCV
Ricer husk	3897	26%	1013.22
Wood Chips	4123	14%	577.22
Others/Agri Residues	2689	60%	1613.4
		Average GCV	3203.84

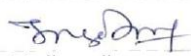

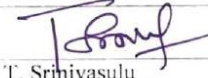
Therefore,based on the committeeis inclined to consider the average GCV of 3204 Kcal/kg.

D. STATION HEAT RATE:

There is no biomass power plant in operation in Telangana. It is to submit that Hon'ble commission has determined variable cost of Biomass power plants for FY 2019-2020 and FY 2020-2021 in OP NO. 15 of 2020 and OP No.21 of 2020 dated 28.08.2020 where in considered 4200 Kcal/kWh as SHR. In view of this committee is inclined to consider 4200 Kcal/kwh as SHR.

E. Fuel Cost Issues for Biomass based Plants

Committee has requested BEDA/TSSISMA and Developers to submit the balance sheets and cash receipts for purchase of fuels. As some of the developers informed that there is no such records and balance sheet of same from their end. In response to our letter, M/s RPPL has submitted the data pertains to fuel cost. Based on RPPL and APTEL parameters committee has arrived the fuel cost.

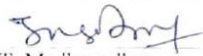

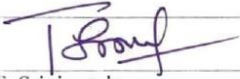
		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch.Chakrapani CGM(RAC),TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREIDCO Convenor

As per RPPL data Fuel Cost Calculation								
Fuel Mix % As per data of RPPL	Qty As fired (kg).i.e 1.36	Conversion Factor	Qty as fired	Fuel Cost Without Handling (in Rs/Ton)	Fuel Cost with Handling (in Rs/Ton)		Proportionate Price in Rs	Fuel Cost considered for tariff determination
A	$B=(1.36*A)/100$	As per APTEL Order (C)	B/C					(Rs/Ton)
26	0.354	1	0.3536	2482.61	2800	317.39	990.08	3181
37	0.503	0.75	0.670933	2637.98	3000	362.02	2012.8	
37	0.503	0.75[1]	0.670933	931.93	2100	1168.07	1408.96	
100			1.713848				4059.6	

It is further submit that, as this data provided by M/s RPPL is not certified by their auditor. In view of the committee has not inclined completely the data provided by M/s RPPL. Also it is further submit that, as fuel mix varies from plant to plant, it is noted from some of the plants as majority of plants uses coal also as one of the fuel .

In view of this Committee has undertaken market research from various sources it is understood that rice husk cost varies from Rs.2000 to 2800 /MT and Juliflora cost varies from Rs. 1700 to Rs.2800/MT and Coal cost for that period taken as Rs.2850/MT including handling charges.

Based on the above parameters, tentative fuel costs for calculated and presented in

		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convenor

FUEL COST CALCULATION AS PER market Research data							
Type fuel	Fuel Mix % As per data of SGEL	Qty As fired (kg).i.e 1.36	Conversion Factor	Qty as fired	Fuel Cost with Handling (Rs/Ton)	Proportionate Price(Rs/Ton)	Fuel Cost considered for tariff determination (Rs/Ton)
	A	B=(1.36*A)/100	As per APTEL Order (C)	B/C			
Rice husk	61	0.830	1	0.8296	2400	1991.04	2535
Juliflora	24	0.326	0.75	0.4352	2100	913.92	
COAL	14	0.190	1	0.1904	2850	542.64	
Total	100			1.4552		3447.6	



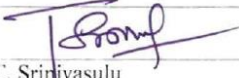
The committee has carefully examined the submissions of the fuel prices submitted by RPPL & SGEL. However, the data submitted is not supported with audited documents. Hence, the committee has arrived average fuel cost based on the above two company parameters, i.e Rs. 2855 /MT for the period FY 2014-15 to 2018-19.

F. FUEL Cost Escalation

In response to our request on submission of fuel cost data pertains to Month wise and source wise from Biomass power developers, we have received only partial unaudited data from M/s Shalivahana and M/s RPPL. Based on the developers submitted data and market research of committee has analysed and ascertained escalation cost year wise.

Here is summary of coal cost in year wise:

S.No	Coal cost (Rs./MT)	Escalation
2014-2015	2,942	0
2015-2016	3,081	5%
2016-2017	2,122	-45%
2017-2018	3,000	29%
2018-2019	3,222	7%
Average	2873	-1.00 %

		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convenor

Based on M/s SGEL Submitted data, average fuel cost for year wise arrived, same summarised in table below:



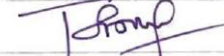
AVERAGE FUEL PRICES DURING THE YEAR 2014 TO 2019 as per SGEL Data						
Month / Year	Rice Husk Cost (Rs./MT)	Escalation %	Fire wood (Rs./MT)	Escalation %	other biomass (Rs./MT)	Escalation %
FY 2014-15	2,286		2,107		2,083	
FY 2015-16	2,410	5.42%	2,308	9.55%	2,020	-3.03%
FY 2016-17	2,351	-2.44%	2,170	-5.99%	1,855	-8.14%
FY 2017-18	2,350	-0.04%	-		2,081	12.19%
FY 2018-19	2,441	3.85%			2,099	0.85%
FY 2019-20	2,493	2.14%			1,152	-45.14%
Average	2,388	1.79%	1,646	1.78%	1,882	-8.65%

From the above table it is clear that, escalation percentage varies significantly in fuel wise.

It is further submit that Hon'ble commission has issued orders for year wise escalation cost for Biomass Projects are presented in table below, based on that it is observed that average of 3.14% annual escalation.

	Actual Fuel Cost Escalation Considered by Hon'ble commission	Order Date
FY 2014-15		
FY 2015-16	7.53%	16th July 2015
FY 2016-17	-5.02%	04th April 2016
FY 2017-18	0.95%	8th June 2017
FY 2018-19	9.08%	10th April 2018
Average	3.14%	

It may be noted in this context that the commission approved fuel price for biomass for FY 2019-2020 and FY 2020-2024, as this order having not been challenged, attained finality. Hence any escalation allowed on base price for FY 2014-2015 shall not result in the fuel price exceeding the approved fuel price for FY 2019-20 for the past period. Hence committee recommended considering the escalation rate of 2% over base year price.

		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convener

SUMMARY OF NORMATIVE PARAMETERS:

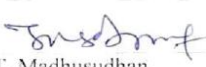

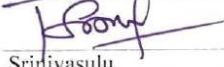
Sl.no.	Parameter Description	As per the committee recommended parameters	As per the Commission's Order dated 16.05.2014
1	Station Heat Rate	4200 kcal/kwh	4200 kcal/kwh
2	Gross Calorific Value of fuel	3203 Kcal/kg	3100 Kcal/kg
3	Fuel Price base year (FY 2014-15)	Rs 2855/ MT	Rs 2843/ MT
4	Specific Fuel Consumption	1.311 Kg/kwh	1.35 Kg/kwh
5	Fuel Cost Escalation	2%	

2. Fuel Cost issue of Bagasse based power plants:

We have requested Sugar Mills Developers Association to provide actual data like fuel cost, invoices and audited account to arrive the Bagasse fuel price. In response we have received the booklets of SISMA and fuel consumption calculation from M/s Kakatiya Cement and Sugar Industries Limited. Here is the summary of M/s KCSIL data.

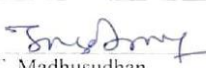
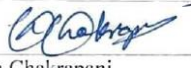
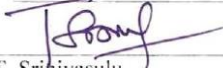
Year	Bagasse (GCV)	Coal(GCV)	SFC (Kg/kWh)	SHR (Kcal/kWh)
2014-15	2200	3100	2.19	5044
2015-16	2150	2900	2.14	4742
2016-17	2250	3150	2.13	4929
2017-18	2100	3050	2.16	4743
2018-19	2270	2950	2.12	4971
			2.15	

On request of committee, SISMA and their members are not able to submit the invoices and full audited details for the entire product sold by them in the whole year.

		
T. Madhusudhan CGM(IPC&RAC), TSNDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convener

Further the committee has undertaken market research to assess the cost of Bagasse fuel price. The market prices of bagasse are not available directly as this is by product of sugar mills. The bagasse prices assessed in market research are much lesser than what the commission has approved in its order dated 16.05.2014.

In view of the limited availability of data in primary and secondary research, committee is inclined to consider the APERC order in OP No.32 of 2014 dated 15.12.2022; as the operation of Bagasse power plants not vary significantly from location to location, in view of this committee considered Rs. 1489 per tonne.

		
T. Madhusudhan CGM(IPC&RAC), TSNPDCL Chairperson	Ch. Chakrapani CGM(RAC), TSSPDCL Member	T. Srinivasulu Project Director- WE&BM, TSREDCO Convenor

Annexure-I Public Notice



TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
#11-4-660, 5th Floor, Singareni Bhavan, Red Hills, Khairatabad Hyderabad 500 004

PUBLIC NOTICE

In the matter of passing consequential order as per the Hon'ble Appellate Tribunal for Electricity (APTEL) order dated 08.03.2022 for determining the variable component of tariff for biomass and bagasse-based power plants for the period from 01.04.2014 to 31.03.2019.

The Hon'ble Appellate Tribunal for Electricity passed order on 08.03.2022 in Appeal Nos 250 of 2014 , Appeal No 284 of 2014, Appeal No 297 of 2014 & Appeal No 42 of 2016 filed by the Biomass Energy Developers Association & Others, South Indian Sugar Mills Association & Others and APSPDCL & APEPDCL on the orders passed by the Commission on 16.05.2014 and 19.07.2014 In the said order, inter alia the Hon'ble APTEL gave the following directions:

- i. The Commission shall consider afresh the detailed submissions made by the Appellant which require reasonable consideration and issue revised fuel cost for Biomass-based plants on the basis of the actual market purchase price, the composition of fuel mix, and related parameters.
 - ii. The State Commission shall relook at the fuel cost escalation for Biomass - based plants based on the contention of the appellant and formulate a revised escalation index.
 - iii. The Commission shall review the bagasse fuel cost considering the submissions of the Appellants and the Respondents inter-alia the prevailing market price of the bagasse and the landed market cost of fuel, as available, for the coal-based generating stations.
2. In view of the above directions of the Hon'ble APTEL, the Commission has initiated action by constituting a Study committee for determining the normative parameters for Biomass and Bagasse based power plants.
3. Study committee recommendations report on normative parameters for determining the variable component, is placed on the website of the Commission.
4. The Commission proposes the following normative parameters based on the study committee recommendations for determining the variable component of tariff for biomass and bagasse-based power plants for the period from 01.04.2014 to 31.03.2019.

Sl. No.	Parameter Description	units	Proposed normative parameters
	A. Biomass		
1	Station Heat Rate	kcal/kwh	4200
2	Gross Calorific Value of fuel	Kcal/kg	3203
3	Fuel Price base year (FY 2014-15)	Rs/MT	Rs.2855/-
4	Specific Fuel Consumption	Kg/kWh	1.311
5	Fuel Cost Escalation	%	2%
6	Auxiliary consumption	%	10%
	B. Bagasse		
7	Fuel Cost of Bagasse based power plants:	Rs/ MT	Rs.1489/-

5. The Commission intends to invite views/objections/suggestions from any interested persons/stakeholders in respect of the above. Copies of the orders passed by the Commission on 16.05.2014 and 19.07.2014 and APTEL Order dated 08.03.2022 in Appeal Nos 250 of 2014 , Appeal No 284 of 2014, Appeal No 297 of 2014 & Appeal No 42 of 2016 are placed on the website of the Commission (www.tserc.gov.in). Views/Objections/ suggestions may be sent to the Secretary, TSERC on or before 21-06-2023, 5:00 P.M.

6. The subject matter will be taken up for public hearing **on 28-06-2023 at 11:30 A.M.** in the Court hall of the Commission

Place: Hyderabad
Date:01.06.2023

Sd/-
Commission Secretary (FAC)



Annexure-II
**List of Stakeholders who submitted the written Comments/
Objections/Suggestions**

Sl. No.	Name of the Objector
1	Southern Power Distribution Company of Telangana Limited (TSSPDCL)
2	M/s Shalivahana Green Energy Limited (SGEL)
3	M/s Biomass Energy Developers Association (BEDA) represented by its counsel Sri K.Gopal Choudary



Annexure-III
List of Stakeholders who attended the Public Hearing held on
07.08.2023

Sl. No.	Name of the Objector
1	Southern Power Distribution Company of Telangana Limited (TSSPDCL)
2	Northern Power Distribution Company of Telangana Limited (TSNPDCL)
3	Telangana State Renewable Energy Development Corporation Limited (TSREDCO)
4	Telangana State Power Coordination Committee (TSPCC)
5	M/s Biomass Energy Developers Association (BEDA) represented by its counsel Sri K.Gopal Choudary
6	M/s Shalivahana Green Energy Limited (SGEL)
7	M/s Ritwik Power Projects Limited (RPPL)

Annexure-IV
List of Stakeholders who attended the Public Hearing held on
30.08.2023

Sl. No.	Name of the Objector
1	Southern Power Distribution Company of Telangana Limited (TSSPDCL)
2	Northern Power Distribution Company of Telangana Limited (TSNPDCL)
3	Telangana State Power Coordination Committee (TSPCC)
4	Telangana State Renewable Energy Development Corporation Limited (TSREDCO)
5	M/s Biomass Energy Developers Association (BEDA) represented by its counsel Sri K. Gopal Choudary
6	M/s Shalivahana Green Energy Limited (SGEL)