

**IN THE APPELLATE TRIBUNAL FOR ELECTRICITY
(Appellate Jurisdiction)**

**APPEAL NO. 250 OF 2014
APPEAL NO. 284 OF 2014
APPEAL NO. 297 OF 2014 & IA NO. 178 of 2015
&
APPEAL NO. 42 OF 2016**

Dated: **08.03.2022**

Present: **Hon'ble Mr. Justice R.K. Gauba, Officiating Chairperson
Hon'ble Mr. Sandesh Kumar Sharma, Technical Member**

APPEAL NO. 250 OF 2014

In the matter of:

1. Biomass Energy Developers Association,
E-506, Keerti Apartments,
Behind Sarathi Studios,
Ameerpet, Hyderabad 500073.
2. Gowthami Bio-Energies Pvt Ltd,
E-506, Keerti Apts.,
Behind Sarathi Studios Ameerpet,
Hyderabad 500073.
3. Balaji Agro Oils Ltd.,
74-2-19, Old Checkpost Centre,
Krishna Nagar, Vijayawada 520007.
4. Bollineni Castings & Steel Ltd.,
6-2-913/914, Progressive Towers,
1st Floor, Khairatabad, Hyderabad 500004.
5. The Gowthami Solvent Oils Ltd
Post Box No.7, Pydiparru,
Tanuku- 534211 West Godavari District.

6. Jocil Ltd,
Box No.216, Arundalpet,
Guntur - 522002.
7. Jyoti Bio-Energy Ltd,
4th.Floor, Mayank Towers,
Raj Bhavan Road, Hyderabad - 500082.
8. Greenko Energies Pvt. Ltd.,
Plot No.1071, Road No.44,
Jubilee Hills, Hyderabad-500034.
9. Matrix Power Pvt Ltd,
8-2-277/12, Road No.3,
Banjara Hills, Hyderabad-500034.
10. Shalivahana Green Energy Ltd,
7th Floor, Minerva Complex,
S.D.Road, Secunderabad-500003.
11. Satyakala Power Projects Pvt Ltd,
Ganguru- 521139, Penamaluru Mandal,
Krishna Dist.
12. Saro Power & Infrastructures Ltd,
19-2-217/2, Mir Alam Tank Road,
Hyderabad - 500064.
13. Sree Rayalaseema Green Energy Ltd,
KPS Complex, Station Road,
Gooty - 515402.
14. Veeraiah Non Conventional Power Projects Ltd,
Kurumaddali- 521157,
Pamarru Mandal, Krishna Dist..
15. Varam Power Projects Pvt. Ltd,
8-4-120/3, Raja Complex,
G.T.Road, Srikakulam - 532001.
16. Vijay Agro Products Pvt Ltd,
Enikepadu - 521108, Vijayawada.Appellants

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Mr. Sri Harsha Peechara
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Mr. D. Acharyya
Ms. Vidhi Jain
Mr. Krishan Dhar for R-4 & 5

Mr. P. Shiva Rao for R-6 & 7

APPEAL NO. 284 OF 2014

In the matter of:

1. Biomass Energy Developers Association,
E-506, Keerti Apartments,

- Behind Sarathi Studios,
Ameerpet, Hyderabad 500073.
2. Gowthami Bio Energies Pvt Ltd,
E-506, Keerti Apts.,
Behind Sarathi Studios Ameerpet,
Hyderabad 500073.
 3. Balaji Agro Oils Ltd.,
74-2-19, Old Checkpost Centre,
Krishna Nagar, Vijayawada 520007.
 4. Bollineni Castings & Steel Ltd.,
6-2-913/914, Progressive Towers,
1st Floor, Khairatabad, Hyderabad 500004.
 5. The Gowthami Solvent Oils Pvt Ltd
Post Box No.7, Pydiparru,
Tanuku- 534211, West Godavari District.
 6. Jocil Ltd,
Box No.216, Arundalpet, Guntur - 522002.
 7. Jyothi Bio Energy Ltd,
4th.Floor, Mayank Towers,
Raj Bhavan Road,
Hyderabad - 500082.
 8. Greenko Energies Pvt. Ltd.,
Plot No.1071, Road No.44,
Jubilee Hills, Hyderabad-500034.
 9. Matrix Power Pvt. Ltd.,
8-2-277/12, Road No.3,
Banjara Hills, Hyderabad-500034.
 10. Ritwik Power Projects Ltd.
Flat No. 201, Plot No. 20, Sri Chaitanya Residency,
Sagar Society, Road No. 2, Banjara Hills,
Hyderabad – 500034.
 11. Satyamaharishi Power Corpn. Ltd.,
Flat No.202, Plot No.20, Sri Chaitanya Residency,

Sagar Society, Road No.2,
Banjara Hills,
Hyderabad-500034.

12. Shalivahana Green Energy Ltd.,
7th Floor, Minerva Complex, S.D. Road,
Secundarabad – 500003.
13. Satyakala Power Projects Pvt Ltd,
Ganguru- 521139, Penamaluru Mandal,
Krishna Dist.
14. Saro Power & Infrastructures Ltd,
19-2-217/2, Mir Alam Tank Road,
Hyderabad - 500064.
15. Sree Rayalaseema Green Energy Ltd,
KPS Complex, Station Road,
Gooty - 515402.
16. Suryateja Power Projects Pvt. Ltd.,
Giri Sikara Apartments, Flat No.A3, 6-600/2/B,
Padmavathi Nagar,
Khairatabad,
Hyderabad – 500004.
17. Veeraiah Non Conventional Power Projects Ltd,
Kurumaddali- 521157,
Pamarru Mandal, Krishna Dist..
18. Varam Power Projects Pvt. Ltd,
8-4-120/3, Raja Complex,
G.T.Road, Srikakulam - 532001.
19. Vijay Agro Products Pvt Ltd,
Enikepadu - 521108, Vijayawada.Appellants

Vs.

1. Andhra Pradesh Electricity Regulatory Commission,
#11-4-660, 4th Floor, Singareni Bhavan,
Red Hills, Hyderabad 500004.

- 1a Andhra Pradesh State Electricity Regulatory Commission,
c/o Energy Department, Government of
Andhra Pradesh, Secretariat, Hyderabad.
- 1b Telangana State Electricity Regulatory Commission,
c/o Energy Department, Government of Telangana,
Secretariat, Hyderabad.
2. Southern Power Distribution Company of Andhra Pradesh Ltd.,
19-13-65/A, Srinivasapuram,
Tiruchanoor Road, Tirupati 517503.
3. Eastern Power Distribution Company of Andhra Pradesh Ltd.,
P&T Colony, Seethammadhara,
Visakhapatnam 530013.
4. Southern Power Distribution Company of Telangana Ltd.
(previously called Central Power Distribution Company
of Andhra Pradesh Ltd.),
Corporate Office, 6-1-50,
Mint Compound, Hyderabad 500063.
5. Northern Power Distribution Company of Telangana Ltd.
(previously called Northern Power Distribution Company
of Andhra Pradesh Ltd.),
Corporate Office, 2-5-31/2, Vidyut Bhavan,
Nakkalgutta, Hanamkonda, Warangal 506001.

....Respondent(s)

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Ms. Indrani
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Mr. Vishnu Thulasi Menon

Mr. K. V. Balakrishnan
Mr. R. K. Sharma
Mr. D. Bharti Reddy for R-1

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Mr. ADN Rao, Sr. Adv.
Ms. D. Bharti Reddy
Mr. Harsha Peechara
Mr. Ashish Tiwari
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Ms. Priyanka Tyagi
Ms. Gauri P. Desai for TSERC

Mr. A. Subba Rao
Mr. Krishan Dhar
Mr. K.L.D.S. Vinober for R-2 & 3

Mr. Sri Harsha Peechara
Mr. Ashish Tiwari
Mr. A. Subbarao
Ms. Vidhi Jain
Mr. Krishan Dhar
Mr. K.L.D.S. Vinober
Mr. P. Shiva Rao for R-4 & 5

APPEAL NO. 297 OF 2014 & IA No. 178 of 2015

In the matter of:

1. M/s. The South Indian Sugar Mills Association,
Andhra Pradesh, having its Registered Office
At Door No.5-9-22/69, Adarshnagar, Hyderabad
Rep. by its Secretary Mr. R.S. Bhale Rao
2. M/s. Empee Power Co (I) Limited
having its registered office at
Ayyapareddipalem, Naidupet-524 126
Nellore District, Andhra Pradesh
Nellore, rep. by its Chairman, M.P. Purushothaman
3. M/s. K.C.P. Sugar and Industries Corporation Ltd.,
“Ramakrishna Buildings”, No.239, Anna Salai
Chennai-600 006.

Rep. by its Asst. General Manager,
Shri Dasari Ranganayakulu

4. M/s. The Jeypore Sugar Company Limited,
Chagallu Village, Chagallu Mandal,
West Godavari District,
Andhra Pradesh, Pincode-534342
Rep.by. its Vice President & Chief General Manager,
P.Bhaskara Rao.
5. E.I.D - Parry (India) Limited,
(Formerly Parrys Sugar Industries Ltd/GMR Industries Ltd/M/s.GMR
Technologies & Industries Ltd),
Sankali village, R. Amudalavalasa Mandal,
Srikakulam District, Andhra Pradesh .
Rep. by its Senior Manager (Accounts),
Sri. Srinibas Panda,
6. M/s. SNJ Sugars and Products Limited,
(Formerly known as Sagar Sugars & Allied Products Limited),
Factory & Regd. Off: Nelavoy Village,
Sri. Rangarajapuram Mandal, Chittoor District – 517 167,
Andhra Pradesh.
7. M/S Ganpati Sugar Industries Ltd.,
Fasalwadi, Sangareddy, Medak District - 502294,
Telangana. Rep.by its Director(Technical), R.Nanda Kumar.
8. M/s. Nav Bharat Ventures Limited
(Formerly Deccan Sugars Ltd.)
Nava Bharat Chambers, Rajbhavan Road,
Hyderabad, Telangana.
Rep.by its authorized signatory, Sri. C.Mani Kumar
9. M/s. Gayatri Sugars Limited.,
6-3-663/E, Flat No.301, Diamond House,
Behind Topaz Building, Punjagutta,
Hyderabad – 500 082, rep. by its Executive Director,
Sri T. Sarita Reddy, ...Appellants

Vs.

1. Andhra Pradesh Electricity Regulatory Commission,
4th & 5th Floor, Singareni Bhavan, Red Hills,
Hyderabad – 500 004.
2. Southern Power Distribution Company of Telangana Ltd.,
(Formerly known as Central Power Distribution Company of
Andhra Pradesh Ltd.), represented by its
Managing Director, 6-1-50, Mint compound,
Hyderabad 500 063.
3. Southern Power Distribution Company of
Andhra Pradesh Ltd., represented by its
Managing Director, Kesavayanigunta,
Tiruchanoor Road, Tirupati -517 503.
4. Northern Power Distribution Company
of Telangana Ltd., represented by its
Managing Director, 11-5-423/1/A,
First Floor, 1-7-668, Postal Colony,
Hanamkonda, Warangal - 506 001.
5. Eastern Power Distribution Company of
Andhra Pradesh Ltd., represented by its
Managing Director, P & T Colony,
Seethamadhara, Visakhapatnam 517 503 ... Respondents

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Mr. Ashwin Ramanathan

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Mr. P. Shiva Rao for R-3

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Mr. Krishan Dhar
Mr. KLDS Vinober
Mr. P. Shiva Rao for R-4&5

APPEAL NO. 42 OF 2016

In the matter of:

1. Southern Power Distribution Company of Andhra Pradesh Ltd.,
Rep. by the Chairman and Managing Director,
Raghavendra Nagar,
TIRUPATI – 517 501,
Andhra Pradesh.
2. Eastern Power Distribution Company of Andhra Pradesh Ltd.,
Rep. by the Chairman and Managing Director,
P&T Colony, Seethammadhara,
VISHAKHAPATNAM– 530013,
Andhra Pradesh.

.....Appellants

Vs.

1. Biomass Energy Developers Association,
6-2-913/914, Progressive Towers, Khairatabad,
Hyderabad 500073.

2. Balaji Agro Oils Ltd.,
74-2-19, Old Checkpost Centre,
Krishna Nagar, Vijayawada 520007,
Andhra Pradesh.
3. M/s. Bollineni Castings & Steel Ltd.,
6-2-913/914, Progressive Towers,
1st Floor, Khairatabad,
Hyderabad 500004, Telangana State.
4. The Gowthami Solvent Oils Pvt. Ltd.
Post Box No.7, Pydiparru,
Tanuku- 534211 West Godavari District, Andhra Pradesh.
5. Jocil Ltd,
Box No.216, Arundalpet,
Guntur - 522002, Andhra Pradesh.
6. Jyothi Bio Energy Ltd,
4th.Floor, Mayank Towers,
Raj Bhavan Road,
Hyderabad – 500082.
7. Greenko Energies Pvt. Ltd.,
Plot No.1071, Road No.44,
Jubilee Hills, Hyderabad-500034,
Telangana State.
8. Matrix Power Pvt Ltd,
8-2-269/3/1, No.257, Road No. 2,
Banjara Hills, Hyderabad-500034,
Telangana State..
9. Satyakala Power Projects Pvt Ltd,
Ganguru- 521139, Penamaluru Mandal,
Krishna Dist., Krishna District, Andhra Pradesh.
10. Sri Rayalaseema Green Energy Ltd.,
KPS Complex, Station Road,
Goody – 515402, Andhra Pradesh.
11. Veeraiah N C Power Projects Ltd,

- Kurumaddali- 511157,
Pamarru Mandal,
Krishna Dist., Andhra Pradesh.
12. Varam Power Projects Ltd,
8-4-120/3, Raja Complex, G.T. Road,
Srikakulam - 532001, Andhra Pradesh.
13. Vijaya Agro Products Pvt Ltd,
Enikepadu - 521108,
Vijayawada, Andhra Pradesh.
14. Shree Papers Ltd.,
Post Box No. 6, C. Ragampet,
Samalkot – 533440, Andhra Pradesh.
15. Perpetual Energy Systems Ltd.,
NSL Icon, Plot No. 1, 4th Floor, 8-2-684/2/A,
Road No. 12, Banjara Hills,
Hyderabad – 500034, Telangana State.
16. Sri Kalyani Agro Industries,
Prathipadu – 534146,
West Godavari District, Andhra Pradesh.
17. M/s. SLS Power Limited,
No. 30, 14th Cross, 2nd Phase,
2nd Stage, West of Chord road,
Mahalakshimpuram, Bangalore – 560086.
18. Om Shakti Renergies Ltd.
Plot No. 1115, Road No. 54, Jubilee Hills,
Hyderabad – 500034, Telangana State.
19. Rithwik Energy Systems Ltd.,
Flat No. 201, Plot No. 20,
Sri Chaitanya Residency, Sagar Society,
Road No. 2, Banjara Hills, Hyderabad – 500034,
Telangana State.
20. M/s. Agri Gold Projects,
Agri Gold House , 40-63, 4th Floor,
Hotel Murali fortune Lane,
Labbipet, M.G. road, Vijayawada – 520010,

Andhra Pradesh.

21. Satyamahrshi Power Corpn. Ltd.,
Flat No. 202, Plot No. 20,
Sri Chaitanya Residency,
Sagar Society, Road No. 2, Banjara Hills,
Hyderabad – 500034, Telangana State.
22. Suchand Powergen Pvt. Ltd.,
309, Bachupally, Khurbullpur Mandal,
Hyderabad – 500072, Telangana State.
23. Clarion Power Corporation Ltd.,
6-3-918, Panjagutta,
Hyderabad – 500082, Telangana State.
24. Andhra Pradesh Electricity Regulatory Commission,
4th and 5th Floor, Singareni Bhavan,
Red Hills, Hyderabad – 500004,
Telangana State.

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J U D G M E N T

PER HON'BLE MR SANDESH KUMAR SHARMA, TECHNICAL MEMBER

1. The above Captioned Appeals are filed against the Tariff Orders dated 16.05.2014 and 19.07.2014 passed by the Andhra Pradesh Electricity Regulatory Commission (in short the "Respondent Commission" or the "APERC", or the State Commission").

2. The captioned Appeal No. 284 of 2014 ("Appeal 284") and Appeal No. 297 of 2015 ("Appeal 297") have been filed by the Biomass Energy Developers Association &Ors ("Appellants Biomass") and South Indian Sugar Mills Association &Ors ("Appellants Bagasse") having grievances against the common order dated 16.05.2014 ("Impugned Order-1") passed by the Respondent Commission *suo moto* in O.P. No. 32 of 2014 inter alia determining the variable cost for Biomass, Bagasse and Industrial Waste based Power projects for the period from 1.4.2014 to 31.3.2019.

3. The Appeal No. 250 of 2014 filed by the Appellants Biomass and Appeal No. 42 of 2016 filed by Southern Power Distribution Company of Andhra Pradesh Ltd. & Anr. ("Appellants SPDC") as cross Appeals against the Common Order of the Andhra Pradesh Electricity Regulatory Commission dated 19.07.2014 ("Impugned Order-2") passed *suo motu* 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 and applicable to all Biomass based Generating Plants in undivided State of Andhra Pradesh.

4. The Captioned Appeals are taken up together for hearing as the issues which emerge out of these Appeals are common and relate to Fixed and Variable Cost for Biomass and Bagasse based Power Plants. The first three Captioned Appeals being Appeal Nos. 250 of 2014, 284 of 2014 & 297 of 2014 are connected and the fourth-one, being Appeal No. 42 of 2016, is the cross appeal.

5. The 1st Appellant in the first (Appeal 250) and second (Appeal 284) Captioned Appeals is an Association of Biomass Energy Developers who had set up Biomass based power generation plants within the undivided Andhra Pradesh. The other Appellants are members of the 1st Appellant Association and are Companies which have established Biomass based power generation projects in the State.

6. The 1st Appellant in Appeal 297 is the Association of Sugar Mills in the State of Andhra Pradesh, and Appellants 2 to 9 are members of the Association which have set up Bagasse based co-generation Power Projects within undivided Andhra Pradesh.

7. The two Distribution Companies of Andhra Pradesh- Southern Power Distribution Company and Eastern Power Distribution Company are the 1st and 2nd Appellant in Appeal 42.

8. The Andhra Pradesh Electricity Regulatory Commission ("APERC"), the State Electricity Regulatory Commission of the undivided State of Andhra Pradesh, is the first Respondent in the first, second and third Captioned Appeals and Respondent no. 24 in the fourth Captioned Appeal. The APERC is succeeded by Andhra Pradesh State Electricity Regulatory Commission ("APSERC") for the State of Andhra Pradesh and Telangana

State Electricity Regulatory Commission (“TSERC”) after the bifurcation of undivided State of Andhra Pradesh.

9. The Distribution Companies of State of Andhra Pradesh and State of Telangana are the other Respondents in the first three Captioned Appeals whereas Association of Biomass Energy Developers and the members of the Association and are Companies which have established Biomass based power generation projects in the State are the Respondents in Appeal 42 (the fourth Captioned Appeal).

10. It is important to note that by virtue of the A.P. State Reorganization Act, 2014, the Agreements for supply of electricity entered by the developers of Biomass and Bagasse based Power Plants and the Distribution Companies of undivided Andhra Pradesh were succeeded by Agreements with the Distribution Companies of the two States – State of Andhra Pradesh and Telangana.

Facts of the Case

11. The Respondent Commission vide order dated 20.03.2004 in Review Petition no. 84 of 2003 (Original Petition no. 1075 of 2001) has determined the tariff for the Biomass based power plants. The said order was challenged by the Appellants before this Tribunal and was set aside vide common Judgement dated 02.06.2006 in Appeal No. 1 of 2005 & batch. Hon’ble Supreme Court of India in its Judgement dated 08.07.2010, however, setting aside the judgment of the Hon’ble Tribunal dated 02.06.2006, remand the matter to the State Commission to determine the tariff afresh.

12. Subsequently, the Respondent Commission, against the remand proceedings, passed separate orders each dated 12.09.2011, by each of the three members constituting the Commission. The said orders were challenged before this Tribunal in Appeal no. 166 of 2011 & batch. This Tribunal through common Judgement dated 20.12.2012 partly allowed the Appeal and directed the State Commission to issue fresh orders in accordance with the Tribunal's Judgement. Meanwhile a review petition being R.P. No. 4 of 2013 was filed which was disposed of along with connected review petitions by this Tribunal by a common Judgement dated 30.04.2013.

13. Subsequently, the Respondent Commission passed a consequential order dated 22.06.2013 determining the fixed cost component of tariff for the first 10 years of operation with effect from 1.4.2004 and the variable cost component for the period from 1.4.2004 to 31.3.2009 for biomass based power plants.

14. The Civil Appeals filed by the licensees and the generating companies against the Judgment dated 20.12.2012 and the Order dated 30.04.2013 are pending before the Hon'ble Supreme Court.

15. The Respondent Commission vide press release dated 21.02.2014, issued a consultation paper for the determination of variable cost for, inter alia, biomass based power projects for the period FY 2014-15 to FY 2018-19, seeking objections to be submitted by 05.03.2014.

16. Subsequently, the Respondent Commission passed the impugned order dated 16.05.2014 (Impugned Order-1) in O.P. No 32 of 2014

determining the variable component of tariff for biomass and bagasse based power plants for the period 1.4.2014 to 31.03.2019.

17. Meanwhile, the Respondent Commission against a batch of petitions for determining the fixed cost for 11th to 20th year of operation in respect of those who had completed 10 years of operation, passed the Impugned Order-2 dated 19.07.2014 determining the fixed cost for all biomass based power plants for the 11th to 20th year of operation.

18. Hence the captioned Appeals by the Appellants having grievances against the two Impugned Orders. The issues which are common / connected and raised during the hearings in these Appeals will be dealt with hereafter and are stated as:

a) Variable Cost Issues for Biomass based Plants (Appeal 284)

- i. Station Heat Rate.
- ii. Auxiliary consumption.
- iii. Gross Calorific Value of Fuel.
- iv. Fuel Cost.
- v. Fuel Cost escalation.

b) Fuel Cost Issue for Bagasse based Plants (Appeal 297)

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.
- ii. Auxiliary consumption.
- iii. Operation & Maintenance Expenses and escalation.

19. The other two issues raised in these Appeals being (a) violation of principles of natural justice, regulations, transparency and (b) Arbitrariness and irrationality. We are not considering these two contentions as the Appeals are considered on merits in respect of the tariff components as determined vide the impugned orders.

20. There were certain other issues raised by the Appellants as part of the four Captioned Appeals, however, withdrawn during the proceedings in these Appeals.

Analysis and Observations

21. Before examining the issues, we note here the specific studies carried out for standardising certain technical parameters which form the basis for Tariff determination. These are namely the Report prepared by Expert Technical Committee constituted by Central Electricity Authority, the other being the Report of the Committee formed by Central Electricity Regulatory Commission, and the third is the Report prepared on the behest of the Respondent Commission by KPMG.

22. It is also important to note here that the Biomass based power plants in the State of undivided Andhra Pradesh are very old and most of them completed 10 years of operation prior to issuance of the impugned order. Further, the fuel mix for these plants shall be based on the bio fuel grown in the geographical boundaries of the State. As such, the relevance of any study can be and shall be derived only from a study carried out in respect of old technology based plants as the ones which have filed the present Appeals and the fuel mix available in the State of undivided Andhra Pradesh.

23. One of the Technical Study Report relied upon by this Tribunal in its earlier Judgement dated 20.12.2012 was prepared by Central Electricity Authority. The background for such a technical study is detailed in the following paragraphs.

24. Government of India, Ministry of Power was in receipt of letter dated 22.03.2005 from Shri Laljanbasha, Member of Parliament enclosing therewith a representation from Biomass Energy Developers' Association (BEDA) and a memorandum dated 07.12.2004 from the Members of Parliament from Andhra Pradesh regarding Non-conventional Energy Sources, pursuant to which Ministry of Power directed Central Electricity Authority (CEA), a Statutory Authority constituted under Electricity Act, 2003 to carry out a detailed technical study and submit its report in the subject matter.

25. It has been brought out in the Memorandum that the APERC has reduced the power purchase price from Biomass based projects from Rs. 3.48 per unit in 2003-04 to Rs. 2.88 per unit w.e.f. 01.04.2004. While Tariff of Rs. 3.48 per unit was based on the Guidelines issued by MNES, the new tariff has been worked out based on normative values of heat rate, calorific value, O&M costs for biomass plants stipulated by APERC. It was also made clear to CEA that Minister for Non-conventional Energy Sources also wrote to the Minister of Power recommending appointment of a Technical Expert Committee to go into the details of normative values pertaining to heat rate, O&M cost etc. applicable for biomass based power plants.

26. Accordingly, CEA constituted a Technical Expert Committee having representation from Ministry of Non-conventional Energy Sources (MNES),

Bharat Heavy Electricals Limited (BHEL), Maharashtra State Electricity Board (MSEB), Uttar Pradesh Rajya Utpaadan Nigam Limited (UPRUVNL), Tamilnadu State Electricity Board (TNEB), Andhra Pradesh Power Generating Corporation (APGENCO) and CEA.

27. This said report of the Technical Expert Committee was examined by this Tribunal while passing the Judgement dated 20.12.12 in Appeal no. 166 of 2012 & batch. This Report, as already pointed out, was a follow up of a representation received from BEDA and some Members of Parliament from Andhra Pradesh to look into the normative parameters of the Biomass based projects in wake of tariff determined by the State Commission w.e.f. 1.4.2004 inter alia directions issued by Ministry of Power. The Committee obtained and analysed the actual data for the FY 2004-05 from 11 biomass based plants in Andhra Pradesh, the developers of these plants are part of these Appeals, 2 plants in Tamil Nadu and one plant each in Chhattisgarh, Rajasthan and Karnataka and the Committee also made some site visits. Discussions were also held with the manufacturers like M/s. Thermax, SHEL, Triveni, consultants -Avant Garde, Administrative Staff College of India (ASCI), Hyderabad and Indian Renewable Energy Development Agency (IREDA).

28. The other two reports which are considered by the Respondent Commission are mainly the report submitted in July 2013 by the Committee constituted by Central Electricity Regulatory Commission (CERC) to carry out detailed study on the "Performance/Viability of Biomass based plants operating in the country including the prevailing biomass prices" as part of the process for finalising the CERC (Terms & Conditions for Tariff determination from Renewable Sources) (First Amendment) Regulations

2014 and the other report of KPMG prepared at the instance of the Respondent Commission.

29. This Tribunal vide Judgement dated 20.12.12 directed the Respondent Commission to carry out a scientific study for determining the normative parameters, however, it seems that the Respondent Commission, in compliance to directions given, entrusted the work to KPMG. The relevant part of the Judgement is quoted below:

“However, we feel that there is a need for carrying out a scientific study for determining the normative parameters specific to the state for future. The study should also take into consideration the technological improvements that have since taken place in the generation by non-conventional energy sources. We direct the State Commission to arrange to undertake the study on priority and frame its Tariff Regulations for purchase of power by distribution licensees from NCE sources after considering the Study Report, Central Commission’s Regulations and any other relevant information.”

30. The KPMG study report was submitted on 09.05.2014 and as indicated the exercise was carried out between January and April 2014.

31. The Appellant submitted that the KPMG report is based on the CEA Report and the CERC Report and no technical study has been carried out as done by CEA. It was, further, added that the claim of the study report that there was “primary research” is obviously false. All that the study report refers to is the SHR of 2 plants in Tamil Nadu and 1 plant in Maharashtra. Further questioned the justification of considering the plants of the other States even when the matter is with respect to plants in Andhra Pradesh which were available for inspection and enquiry, such consideration has not been explained. There is no clue as to how those

SHR figures were arrived at. Be that as it may, when a plant of 7.5 MW (plant in AP being between 4-6 MW) has been found to have an SHR of 4400 kcal/kWh on the basis of so-called primary research, there is no reason or logic or explanation for recommending 4200 kcal/kWh.

32. From the above, it is clear that the recommendations of KPMG report cannot be considered for determining the normative parameters for the Power Plants having raised the grievances here.

33. Further, the Report ("CERC Report") submitted by the Committee constituted by CERC has been considered with reference to the subject biomass based power plants of the State of Andhra Pradesh and Telangana, inter alia the period of commissioning of these plants. It may be noted that most of these plants of Andhra Pradesh and Telangana were commissioned prior to the year 2004.

34. We are inclined to accept the contention of the Appellant that the CERC Report is based on biomass power plants which are commissioned much later than the plants of the State of Andhra Pradesh and Telangana and also in reference to power plants of mainly other States. As such, cannot be taken as relevant report for the plants under reference. Some extracts of the CERC Report are as follows:

"1.5. As discussed in the first meeting the Indian Biomass Association vide its letter dated 12.11.2012 submitted following details sought by the Committee:

i. Actual annual performance data of 3 years (2009-10 to 2011-12) some of biomass based power plants and details of operation and maintenance costs;

ii. Plant characteristics with technical details;

iii. Operational details of biomass plants submitted to UNFCCC for parameters reference to generation, average GCV of fuel and Station Heat Rate;

iv. Balance sheet of 2010-11 & 2011-12 one of the plant operating in Rajasthan and one plant in Tamil Nadu.

1.8. *In this connection, apart from considering the details given by the Indian Biomass Power Association, field visits of biomass power plants in various states of the country were undertaken by the sub-Committee for reviewing the performance of the plants. The facilities visited for the review are as under:*

i. Biomass power plant at Rangpur, Kota District, Rajasthan (7.5 MW) operated by M/s Surya chambal Power Limited.

ii. Biomass power plant at Bhaguara, Patiala District, Punjab (12 MW) operated by M/s Punjab Biomass Private Limited.

iii. Biomass power plant at Pebair, District, Andhra Pradesh (6.0 MW) operated by M/s Surya Teja Power Project Limited.

iv. Biomass power plant at Ahmedabad District, Gujarat (4.5 MW) operated by M/s Abellon Clean Energy Limited.”

35. It is also seen from the report that the data collected for Station Heat Rate is with reference to newly commissioned power plants of higher capacity and more efficient plants. It cannot be made as a reference to the older plants and of lower capacities and efficiency.

36. Considering that the only Report which carried out detailed Technical Study for the Plants in question herewith, we find CEA Report as more technically correct and relevant to examine the various issues raised in these Appeals.

37. The Technical parameters for the Biomass based power plants as recommended/ considered by CEA Report are mentioned as follows:

- i. Station Heat Rate (SHR) --- 4500 kCal/kWh
- ii. Auxiliary Consumption --- 10%
- iii. Gross Calorific Value (GCV) --- 3300 kCal/kg
- iv. Specific Fuel Consumption (SFC)--- 1.36 kg/kWh
- v. Plant Load Factor (PLF) --- 80%

38. These Appeals raised the variable cost and fixed cost issues as part of Tariff for the Biomass and Bagasse based power plants located in the States of Andhra Pradesh and Telangana and are sequentially dealt herewith. During the course of the hearing, some of the issues which were submitted in the Appeals were not pressed for relief and considered as dropped from the Appeals.

Variable Cost Issues for Biomass based Plants (Appeal 284)

39. The Appeal 284 has raised issues/ parameters determined as part of Variable Cost for Biomass based power plants and placed before us during the course of the hearing by the Ld. Counsel appearing on behalf of Appellants Biomass are taken up first.

i) Station Heat Rate (SHR)

40. The CERC Report and the KPMG Report recommended SHR of 4200 kCal/ kWh and based on this, the Respondent Commission, for the sake of uniformity, accepted the SHR of 4200 kCal/kWh for both kinds of boilers for the computation of Variable Cost for the period 2014-15 to 2018-19.

41. The Appellant submitted that the Commission did not properly and sufficiently consider the CEA report which was based on power plants in the State. The Commission has also ignored the judgment dated 20.12.2012 of the Hon'ble Tribunal and the observations of the Hon'ble Tribunal with respect to the CEA report. The Commission was not correct in observing that the CEA report did not give any additional allowance on GCV and fuel price as additional allowance was already given on the SHR side. The CEA report was not concerned with fuel price at all. The CEA report only set out operational norms. The Commission failed to see that the CERC committee report had given no basis at all for taking the average design SHR of biomass plants as 3750 kcal/kWh. The Commission ought to have determined the SHR at least at 4500 kcal/kWh as per the CEA report and the judgment of this Hon'ble Tribunal and further made allowance for power plants that are more than 10 years old.

42. The CEA Report recommended SHR of 4500 kCal/kWh based on detailed study in respect of Biomass based power plants located in the State of Andhra Pradesh and Telangana.

43. This Tribunal vide its Judgment dated 20.12.2012 has accepted the CEA Report and the SHR of 4500 kCal/kWh for Biomass & Bagasse based power plants.

44. The Respondents submitted that in compliance of the Judgement of this Tribunal, the erstwhile APERC had reworked the tariff in respect of the Biomass Power Plants for the Multi-year period 01.04.2004 to 31.09.2009 by adopting the SHR @ 4500 kCal/kWh. Whereas the Respondent Commission observed that this value of SHR is highest among the values determined by the other State Commissions across the country including CERC. Further added that the APERC has fixed the SHR in the light of

SHR determined by other Commissions without carrying out a detailed Technical Study.

45. We decline to accept such vague contentions in the light of the recommendations made in the CEA Report which is the only Technical Study available for the Biomass and Bagasse Based Power Plants situated in the State of Andhra Pradesh & Telangana and the life of these power plants. Further, the Respondent Commission has failed to clarify the basis of declaring a change in the SHR for the existing plants which has already been decided by this Tribunal except that some study has been carried out which is not relevant in respect of the Plants in question. It is also important to note here is that the heat rate is the entire amount of energy required by an electric generator or power plant to create one kilowatt-hour (kWh) of electricity. As such with passage of time and deterioration of mechanical machines the heat rate ought to increase and not to decrease.

46. We are of the opinion that the SHR of these plants should remain to be 4500 kCal/ kWh.

ii) Auxiliary consumption.

47. The Appellant submitted that the Commission has not even discussed or considered any additional allowance for plants using woody biomass that requires chipping and additional handling. The determination of the Commission ignores relevant and material considerations and is erroneous, contrary to law and reason and arbitrary. The Auxiliary consumption for biomass plants over 10 years old ought to be at least 12%.

48. On the contrary, the Respondents argued that this Tribunal vide Judgement dated 20.12.2012 decided the Auxiliary Power Consumption of

10%, as specified in the Central Commission's Regulations and recommended in the CEA Report, will be reasonable as the Biomass plants have less number of auxiliaries compared to coal based plants.

49. This Tribunal vide Judgement dated 20.12.12, made the following observation under Para 31.3:

“x) However, as pointed out in the CEA report the biomass plants have less number of auxiliaries compared to coal based plant and there is no milling plant. In view of this we feel that auxiliary power consumption of 10% as specified in the Central Commission's Regulations and recommended in the CEA Report will be reasonable for the biomass plants. Accordingly, decided.”

50. We fail to appreciate the submissions made by the Appellant and therefore, reject the prayer of the Appellant for the Auxiliary Consumption of 12% for plants older than 10 years considering the useful life of these plants as 20 years as discussed in the preceding paragraphs. We opine that there are no technical grounds to review the recommendations made in the CEA Report for Auxiliary Consumption of 10% and upheld by this Tribunal.

51. We also direct the Respondent Commission to carry out a detailed study covering various directions passed in the Judgement dated 20.12.12. Relevant extracts of the Judgement quoted below:

Para 31.3

“ix) We feel that there is need to review the auxiliary consumption for biomass plants considering the following factors:

a) Fouling of heat transfer surfaces in boiler with ash deposits is a problem encountered with biomass fuels. If the heat transfer surfaces are not cleaned regularly and effectively, there is a risk of reduction of steam generation capacity apart

from reduced boiler efficiency. This is corroborated by CEA Report. This leads to stoppage of plant at regular intervals resulting in more stops and start-ups increasing the auxiliary consumption. Even if power is drawn from the grid during the shut down it would mean consumption of additional electricity for running the auxiliaries, resulting in increase in %age auxiliary consumption.

b) Most of the plants are connected to grid at 33 kV voltage where number of trippings have been reported by the Developers resulting in outage of biomass plant and more stops and start ups for the plant.

c) Most of the biomass fuel is stored in open space due to seasonal availability and low density of biomass fuels. In monsoon season the moisture in the biomass fuel increases substantially due to which the boiler cannot achieve full load. When the plant is operated at partial load, the auxiliary consumption increases.”

52. Therefore, we again direct the State Commission to conduct a detailed study covering the above points.

iii) Gross Calorific Value of Fuel (GCV).

53. The Appellant submitted that the State Commission has determined the GCV of the fuel mix as 3100 kcal/kg while observing that the allocation of various fuels in the fuel mix as considered by CEA in 2009 as outdated while considering the biomass atlas referred to by CERC committee which is even older. The State Commission failed to see that the biomass atlas was a survey done to identify the biomass resources in the State. It never purported to assess the fuel mix actually available and used in biomass power plants.

54. The Appellant, further, added that the State Commission has decided the GCV based on its Study Report which refers to some information of plants in Tamil Nadu for unknown and unstated reasons and without any details of the facts and circumstances. Also raised the issue of considering such Plants of other States when the matter is with respect to plants in Andhra Pradesh which were available for inspection and enquiry, is not explained.

55. Also Study Report seeks to report the GCV of 2 biomass plants in Tamil Nadu without any mention of the nature of fuels used, the fuel mix or any other material particulars. The Study Report is not clear as to why a GCV of 3100 kCal/kg is being recommended even showing weighted average GCV of 3315 kcal/kg in Table 13 and weighted average GCV of 3306 kcal/kg from Table 14. Also submitted that the State Commission has also wrongly considered the MNRE suggested GCV of Juliflora of 2800 kcal/kg as in the “as fired” condition in para 2.3.7 and 2.3.8 of the impugned order. The CERC Committee report, in para 2.3.6, clearly sets down the GCV of Juliflora at 2800 kcal/kg as in “as received” condition.

56. The Appellant submitted that based on fuel mix, it can be analysed as follows to arrive at the weighted average GCV for biomass fuels in Andhra Pradesh.

Sl	Biomass Fuel	% in mix	GCV (adjusted)
1	Rice Husk	36.8	3090
2	Juliflora	42.9	2850
3	Agri. Residues & others	20.3	2343
	Total	100.0	
Weighted Average GCV			2835
Rounded off for uncertainties & variations			2800

57. This Tribunal after detailed deliberations and considering the submissions made by the Appellants and Respondents during the proceedings held in Appeal no. 166 of 2011 accepted the recommendations made in the CEA Report and vide Judgement dated 20.12.12 decided Specific fuel consumption of 1.36 kg/kWh based on station heat rate of 4500 kCal/kWh and GCV of 3300 kCal/kg.

58. The CEA Report, analysing the GCV of all the biomass available, recommended GCV as 3300 kCal/kg, we do not find any reasons to review it based on the submissions made before us considering that no detailed study has been carried out as was carried out by CEA in finalising the CEA Report.

iv) Fuel Cost

59. The Respondent Commission has determined a base fuel price of Rs. 2,843 per tonne for the year 2014-15, against the proposed price of Rs. 2830 per tonne indicated in the consultation paper, for the computation of variable cost for the period 2014-15 to 2018-19. The price determined is for an as-fired fuel which also includes transportation and handling costs for the year 2014-15 and the price escalation will be applicable only from the year 2015-16 onwards.

60. The weighted average fuel price works out to be Rs. 2708 per tonne considering the biomass fuel mix for Andhra Pradesh as specified by the CERC Report. The State Commission, considering the uncertainty in the availability of bio fuels, added a comfort factor of additional 5% on the above price of Rs. 2708 per tonne, arriving at the figure of Rs. 2843 per tonne.

61. The price suggested by the Appellant was Rs. 3365/- per tonne based on the fuel mix and computed by dividing 4617 by 1.372 (figure arrived at by calculating the quantity of purchased fuel required for 1 unit of as fired fuel i.e., 1 tonne of fuel in an as-fired condition would require 1.372 tonne of fuel to be purchased).The Appellant submitted that the State Commission erred in holding that the concept of computing the fuel price in as-purchased condition is incorrect and the fuel price has to be applied to the as-purchased quantity as otherwise it would be wholly irrational.

62. It is to add that CEA report has dealt with only technical parameters and has not made any recommendation on Fuel cost.

63. Further, the Appellant placed before us a detailed calculation for determining the fuel cost:

“ADJUSTMENT OF WEIGHT OF FUEL FOR FUEL COST CALCULATION

Computation of conversion factor from “as purchased” to “as fired” quantities

Cotton stalks/ Chilly stalks	Juliflora
Moisture content in cotton stalks/ chilly stalks is 40% and they have leaves to the extent of 20% in as purchased condition. Therefore, the combustible mass is 40%. When the material is dried, the leaves are removed and the moisture content reduces	Juliflora has 40% moisture in as received condition. After drying the moisture content reduces to 20%. 1 kg of Juliflora with 40% moisture in as purchased condition. Weight of dry combustible = 0.6 kg Weight of moisture = 0.4 kg

<p>to 15%. Therefore, the total mass left is derived in the following way:</p> <p>1kg of agri residue with 40% moisture and 20% leaves as purchased.</p> <p>Weight of dry combustible = 0.4 kg</p> <p>Weight of leaves + moisture = 0.6 kg</p> <p>X = Weight of moisture in residual fuel after drying</p> <p>Therefore $X / (X+0.4) = 0.15$, hence $X = 0.07$</p> <p>Therefore, total mass = $0.07+0.4 = 0.47$ kg</p> <p>Therefore, the conversion factor for cotton/chilly stalks from as purchased to as fired is 0.47.</p>	<p>X = Weight of moisture in the residual fuel after drying</p> <p>Therefore $X / (X+0.6) = 0.2$, hence $X = 0.15$</p> <p>Therefore, total mass = $0.15+0.6 = 0.75$</p> <p>Therefore, the conversion factor for Juliflora from as purchased to as fired is 0.75.</p>
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Considering a Specific Fuel Consumption of 1.36 kg/kWh, the conversion of 1.36 kg of fuel in “as fired” condition to the fuel in “as purchased” condition for different fuel mixes is as below:

FUEL MIX AS CONSIDERED BY CEA				
<i>Fuel</i>	<i>Qty in Fuel Mix (%)</i>	<i>Qty as fired (kg)</i>	<i>Conversion Factor</i>	<i>Qty As Purchased (kg)</i>
	A	$B=1.36 \times A$	C	B / C
Rice Husk	36.8	0.5005	1	0.5005
Juliflora	42.9	0.5834	0.75	0.7779
Agri Residues	20.3	0.2761	0.47	0.5874
Total	100.0	1.3600		1.8658

FUEL MIX AS CONSIDERED BY APERC IN IMPUGNED ORDER				
<i>Fuel</i>	<i>Qty in Fuel Mix (%)</i>	<i>Qty as fired (kg)</i>	<i>Conversion Factor</i>	<i>Qty As Purchased (kg)</i>
	<i>A</i>	<i>B=1.36 x A</i>	<i>C</i>	<i>B / C</i>
Rice Husk	56	0.7616	1	0.7616
Juliflora	24	0.3264	0.75	0.4352
Agri Residues	20	0.2720	0.47	0.5787
Total	100.0	1.3600		1.7755

64. The Respondent submitted that the erstwhile State Commission did not agree for the same as the methodology worked out by the Appellant was for 137% of fuel mix to account for additional 37% fuel requirement towards fuel loss due to moisture content for computing the fuel price (viz., proposed 1MT of Fuel as fired condition would require 1.372 MT of fuel to be purchased) and the Commission further observed that it would lead to an unwarranted increase in the Variable Cost. Further, the State Commission had factored in the pricing mechanism, the allowance of additional 5% on an account of fuel loss (between as received basis and as fired basis), due to the moisture content.

65. Further, submitted that the State Commission has duly considered the views of objectors & market prices, survey undertaken by a Study group and also the prices considered by other State Electricity Regulatory Commissions, and determined the Base fuel price @ Rs.2843/tonne for the FY 2014-15 for 'as fired fuel' for computation of Variable Cost (VC] and fuel price escalation on annual basis as per CERC Indexation formula allowed, therefore, the action of the erstwhile APERC was fair to all Stakeholders and the Appellant's contention for abnormal increase of Fuel Cost of Rs 4,617/- is unjustified.

66. We feel that the Respondent Commission should consider afresh the detailed submissions made by the Appellant which require reasonable consideration and issue revised fuel cost on the basis of actual market purchase price, composition of fuel mix and related parameters.

v) Fuel Cost escalation.

67. The State Commission has adopted the CERC price escalation formula for fuel cost, however, it is submitted by the Appellant that it cannot be correct to apply for the biomass fuels and also rejected the submissions of the Appellant that the fuel cost escalation needs to be determined on the basis of parameters relevant to biomass fuels and the CERC formula is tainted by irrelevance. Further, added that the State Commission has not adverted at all to the issue that captive coal is irrelevant and it is also not market determined, if at all coal is to be considered, the Commission has not adverted to why it should be captive coal and not coal in the open market as would be available to a buyer.

68. The Respondents submitted that the project developer had the option to choose escalation in the fuel cost either on normative basis of 5% on the fuel indexation mechanism basis. Further, added that the erstwhile State Commission adopted CERC price escalation Indexation mechanism, which was adopted by other State Commissions.

69. We are not impressed by the contentions of Respondent, on the contrary, inclined to accept the contentions of the Appellant. It is strongly felt that the State Commission should relook the matter and formulate revised escalation index.

Fuel Cost Issue for Bagasse based Plants (Appeal 297)

70. The Appellant submitted that the Respondent Commission in its consultative paper have adopted the bagasse cost of Rs. 950/- per TONNE for FY 2009-10 and escalated the same at 5% per annum to arrive at the bagasse cost of Rs.1,155/- per TONNE for 2013-14. This rate is further escalated by 10.9% (as determined by CERC) to arrive at bagasse cost of Rs.1,281/- for 2014-15. In 2004 and also in 2009, the bagasse price was determined based on the heat equivalent value. The determination of tariff payable to co-gen units using imported coal, during 2013 adopted imported coal cost of Rs.4,100/- per TONNE. Based on the equivalent heat value approach, the bagasse price for 2014-15 works out to Rs.2,111/- as under:

	Imported coal	Bagasse
GCV	4371	2250
Fuel cost for 2014-15	4,100	2250 x (4100/4371)

71. This Hon'ble Tribunal in the matter of SISMA versus TNERC (Appeal No.199 of 2012) dated 4.9.2013 held in para 55 and 56 that -

“It is important to notice that the Central Commission had specifically observed in the Statement of Reasons that the respective State Commissions may consider the prevalent price of Bagasse if the same is higher than the price on equivalent heat value basis.”

72. Further, added that the impugned order was passed adopting certain CERC observations, however, did not consider the observation made by the CERC itself that the State Commission ought to consider the prevalent price of Bagasse if the same is higher than the price on equivalent heat value basis while deciding the price of bagasse. Even the CERC explanatory memorandum for the 2012 Regulations explicitly stated that if

the Bagasse is not used by the Sugar Mills in the power generation, it would be sold and it will fetch revenue at the market price. That revenue which is foregone when the Bagasse is used for power generation is a loss to the sugar mill and consequently it is the cost of the input for power generation.

73. This Tribunal at para no 38 of the Judgement dated 20.12.2012 directed that:

“We direct the state commission to arrange to undertake the study on priority and frame its tariff regulations for purchase of power by distribution licensees from NCE sources after considering the study report, central commission’s regulations and any other relevant information.”

74. The Appellant submitted that the Respondent Commission did not undertake any such study or norms based on ground realities as adopted by other Commissions. The Respondent Commission ought to have appreciated that to have an actual idea of heat requirement of power generation, it is necessary to consider off-season operation when the plant is exclusively used for power generation. Further, added that the bagasse cost of at least Rs. 1950/- per TONNE for the FY 2014-15 should be accepted against the determined cost of Rs. 1,551/- per TONNE for the FY 2014-15, with an indicative annual escalation of 6% per annum.

75. On the contrary, the Respondents have submitted that the State Commission has determined Rs.1,551/tonne as the cost of Bagasse which is much higher than Rs.1,281/tonne as proposed in the consultation paper. The Appellants sought 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.

76. Further, submitted that 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 State Commission has been consistently been adopting the 'heat value approach' by linking Bagasse price to the price of landed cost of coal for thermal power plant 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. The extract of the Judgement quoted below:

“We feel that the price decided by the Chairman and Member-Finance at Rs.745/-per MT is reasonable. We do not find any substance in the contention of the Developers that fuel price of bagasse should be linked to price of biomass. No justification has been given by the Developers for linking of prices of the bagasse with biomass fuel. Bagasse is a byproduct of sugarcane crushing in sugar mill of the bagasse cogeneration plant and its price cannot be linked to price of biomass which is not regulated and has to be procured in open market.”

77. It was, further, submitted that the variable tariff order dated 31.03.2009 for FY 2009-2014 was also based on same approach and has become final and binding on the Appellants.

78. We are inclined to accept the contention of the Respondents and opine that there is a need for review of the Impugned Order 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.

Fixed Cost Issue as pleaded by the Appellant and the Respondents during the course of hearing (Appeal 250 & Appeal 42)

79. As already stated, the Appeal 250 and Appeal 42 are cross Appeals and issues raised therein are similar issues emerging out of the Impugned Order-2. We will take up the issues raised in Appeal 250 thereby resolving the issues falling out of Appeal 42. The Biomass Association and the Developers are the Appellant therein (Appeal 250) and the Distribution Companies are the Respondents in addition to the State Commissions.

i) Plant Load Factor. (Appeal 250)

80. The Appellants submitted that in the study report of KPMG, the average PLF of biomass power plants during 2009-2013 has never been 75%. Even the average PLF of the plants having a PLF of more than 50% is significantly lower than 75%. The study report simply lists high fuel cost and non-availability of fuel as external factors and inefficient operation and poor financial health as internal factors resulting in low PLF without any lucid, rational or meaningful discussion. It appears to wilfully avoid discussion such as would appear to the State Commission as to indicate that it arises from the Commission's own regulatory decisions.

81. The study report does not say why high fuel cost leads to poor PLF. The reality of high fuel cost, when not sufficiently considered and allowed for in the variable cost, would cripple operation sooner than later. There is no reason or particulars whatsoever for the study report saying that there is non-availability of fuel. That is without any basis. If it was meant that fuel is not available at the price at which it is viable to operate on the variable cost allowed in the then effective tariff, the study report ought to have said so. The study report merely and baldly mentions inefficient operation of the biomass plant as a factor without any particulars, details or reasons for such an inference. The study report does not give any reason or discussion for the poor financial health of the biomass plant as a factor. What it appears to avoid explicitly saying is that the poor financial health that has crippled many plants is because of inadequate tariff over inordinately long periods of time.

82. The study report nevertheless opines that the average PLF of plants with more than 30% PLF is 55% and that this is lower than the normative of 80%, and that this is primarily due to external factors, and that such factors should be taken into consideration in determining the fixed cost. This was not considered by the Commission. The factual data as to the actual PLF achieved has not been considered by the Commission. Because the study report wilfully restrained from analysing and discussing the internal factors diligently, it has vaguely stated incorrectly that the so called internal factors should not be considered.

83. It needs to be appreciated that a normative PLF that is not continuously achievable in reality results in continuing under-recovery of fixed costs, and this leads to a downward spiral of the financial health of the power plant which is unsustainable. The realities of the situation require

that the normative PLF be revised to 75%, more particularly for the older power plants that have completed 10 years of operation.

84. The Respondents, however, submitted that KPMG study report was only a secondary or corroborative piece of data. The impugned order majorly relied on CERC regulations 2012, 2014, CERC committee report, CEA 2005 report and APTEL judgement dated 20th December, 2012 to come to its conclusions. Thus, even if the KPMG report was not available with the Commission, the conclusions in the impugned order would have remained the same. Therefore, it is submitted that no prejudice is caused to the appellants by not receiving the report. It is submitted that appeal is a continuation of original proceedings and therefore the objection to the study report can be decided even in the present appeal.

85. Further, added that the Appellants had proposed the PLF@ 75% for the Biomass Plants that are in operation from 11th year to 20th year in lieu of existing 80% threshold norm, stating that majority Biomass Plants have not achieved 80% in the 1st ten years spell to ageing of their plants and poor, quality of biomass fuel, storage problems resulting in lower efficiencies and urged the erstwhile APERC to fix at 75%. Whereas the APERC analyzed reasons for the low PLF achieved by the Biomass Plants and found that low, PLF was due to poor fuel purchase practices adopted by the project developers, which, resulted in excess procurement and storage costs and Boiler damage and further observed that the issue of good quality fuel had already been addressed by it in its order dated 16.05.2014 in O.P.No.32 of 2014, while determining the Variable Cost for the period 2014-2019 and concluded that the State Commission should not compensate for the inefficiencies in the operation of the generators and 80% PLF would be achievable in view of the allowances (5%

allowance in fuel cost, Specific Fuel Consumption (SFC) @ 1.355) allowed by it in the Variable Cost (VC) norms.

86. The APERC further directed the DISCOMs to pay an incentive of 50 Paise per kWh against 35 Paise per kWh as directed this Tribunal in the Judgement dated 20.12.2012 for all generation above 80% PLF, which would promote Biomass Project developers.

87. As could be seen from the above the APERC had considered the problems associated with fuel storage and handling in a holistic manner and allowed necessary allowances in the Variable Cost determinants/factors and further allowed enhanced incentive @ 50 Paise per kWh to enable the Biomass Plants achieve higher generation.

88. This Tribunal in the judgment dated 20.12.2012 at para 31.2 has held that:

“Threshold Plant Load Factor:

i) Chairman and Member-Finance in their respective orders have decided threshold PLF of 80% as determined in the earlier order dated 20.3.2004 and Review Order dated 5.7.2004.

ii) Shri Gopal Chaudhry, learned counsel for the BEDA submitted actual data for six Biomass plants from 2004-05 to 2008-09 to show that the actual average PLF for these plants has been 75.8%. The reasons for not able to achieve a higher PLF have been indicated as:

“(a) When agricultural residue is used in the boilers the phenomenon of super heater corrosion sets in. This leads to monthly stoppage of the power plant due to choking of super heater coils. This further reduces the plant load factor.

(b) Due to the seasonal nature of the biomass fuel and its low bulk density most of the biomass is stored in the open area. This leads to increase in moisture to an extent of 35% in the biomass fuels during the rainy season. Under such a scenario the boiler cannot achieve its full load which will further reduce the turbine load.

(c) The calorific value of the fuels used change continuously rendering combustion controllers ineffective.

(d) Because of the presence of certain sodium salts in the fuels used, which have low melting point, deposition of ash takes place in the super heater area leading to erosion, corrosion, heat transfer and combustion problems.

(e) Because most of our plants run on mixed fuels (with continuously varying calorific value and proportions) maintaining ideal air fuel ratio at all times is impossible". He submitted that the threshold PLF may be fixed at 75%.

vii) Member-Finance in his order has decided threshold PLF of 80% on the basis of statements of CEA, NEDCAP and APTRANSCO.

viii) The period in question i.e., 2004-09, is already over and the actual PLF for all the plants should now be available. However, BEDA has submitted the data for only 6 out of 35 plants which is not a representative data. There are 26 Project developers besides BEDA as appellants in Appeal no. 166 of 2011 out of which only 5 have given their actual PLF data for the period 2004-09. Others have not submitted any data. Other bio based generating companies who are appellants in appeals other than 166 of 2011 have not raised this issue.

ix) The Central Commission in its Regulations of 2009 & 2012 has also fixed PLF at 80% from the 2nd year of operation. We have also examined the Report of Technical Expert Committee constituted by the Central Electricity Authority following a representation received from BEDA and some Members of Parliament from Andhra Pradesh to look into the normative parameter of the Biomass based project in wake of tariff

determined by the State Commission w.e.f. 1.4.2004. The Committee obtained the actual data for the FY 2004-05 from 11 biomass based plants in Andhra Pradesh and 2 plants in Tamil Nadu and one plant each in Chattisgarh, Rajasthan and Karnataka and analysed and also made some site visits. The data analysed in the CEA study of September 2005 indicates PLF of 11 Plants in Andhra Pradesh varying from 77.9% to 96.82% and average of all the plants in Andhra Pradesh, Tamil Nadu, Karnataka, Chattisgarh and Rajasthan at 81.76%. The average PLF of 11 power plants in Andhra Pradesh is 86.72%.

x) *The findings in the CEA Report, Sept., 2005 with regard to Plant load factor are as under:*

“9.7.1 The data furnished by the power plants is tabulated in table-2. From this it can be seen that the plant load factor varies generally between 77.9 to 96.82%. Therefore, it can be concluded that plant load factor above 80% can be achieved by biomass power plants. However, considering the fact that biomass plants make use of mixed fuels, fibrous nature of some of these fuels, presence of sodium and potassium salts in these fuels, increased maintenance on boiler due to these salts, it is recommended that 80% PLF may be considered as reasonable and may be adopted as the bench mark PLF for these plants”.

xi) Thus, we do not find any reason to interfere with the findings of the Chairman and Member- Finance of the Commission fixing threshold PLF at 80%.”

89. It was also held that:

“39(viii)The State Commission is also directed to initiate a study for normative parameters for NCE sources and frame Tariff Regulation as per directions given in paragraph 38. The Commission may also note the directions given in this judgment which may be considered at the time of framing Tariff Regulations and for determination of tariff for the subsequent control period.”

90. We do not find any merit in the contentions of the Appellant and upheld the Impugned Order-2 on this count, however, again direct the State Commission to conduct a detailed study through a competent body to ascertain the technically achievable PLF inert-alia the submissions made by the Stake holders. However, till such study is completed, the PLF as recommended in CEA Report and agreed by this Tribunal i.e., 80% shall continue to be normative PLF.

ii) Auxiliary consumption.

91. The Appellants submitted that the statement in the study report that the actual auxiliary consumption as seen from the data presented was "in line with the normative auxiliary consumption of 10-13% apart from a few exceptions" is unwarranted, unfair, perverse and vitiated by wanton distortion and bias. The impugned normative is not 10-13% but only 10%. The single low 10% value is an exception. Otherwise the range of values in the table clearly shows that the average auxiliary consumption over the 9 years is greater than 12%. Fairly and honestly, the study report ought to have considered and recommended more than 12%.

92. The issue has already been deliberated and decided in the foregoing paragraphs (Para 46 to 48). Further, vide Judgement dated 20.12.12 (para 31.3), this Tribunal has decided that:

“However, as pointed out in the CEA report the biomass plants have less number of auxiliaries compared to coal based plant and there is no milling plant. In view of this we feel that auxiliary power consumption of 10% as specified in the Central Commission’s Regulations and recommended in the CEA Report will be reasonable for the biomass plants. Accordingly, decided.”

93. We do not find any compelling technical reasons to review the above decision and maintain the Auxiliary consumption of 10%.

iii) Operation & Maintenance Expenses and escalation.

94. The Appellant submitted that according to the study report the O&M expenses for the 11th year from actual data is an average of 52 lakh/MW of which the salary and plant maintenance expenses are 39 lakh/MW and administration expenses are 14 lakh/MW. There is no discussion at all as to why the legitimate and necessary costs of travelling, conveyance, legal fees, consulting fees etc are considered to be high or what and to what extent it can be curtailed. The attempt is to arbitrarily arrive at the predetermined and dictated figure of 42 lakhs/MW which the Commission desired, and which was eventually incorporated in the impugned order.

95. It was, further, submitted by the Appellant that the Respondent Commission has not considered the following:

- i. determination of the issue on the basis of materials available on record and on the realities of the situation for plants which are over 10 years old.
- ii. the O&M expenses determined for the 1st 10 years of operation in the judgment dated 20.12.2012, could not be mechanically extended to the 11th year of operation ignoring the age of the plant for which the tariff is to be determined.
- iii. the CERC considered larger capacity plants and that the O&M cost for smaller plants would necessarily be more per MW.
- iv. issue of legal cost.

- v. the average actual O&M expenses of the power plants for the 1st to 10th year of operation was more than that which was allowed in the consequential order dated 22.06.2013.
- vi. the operation costs (salaries, wages, etc) of older plants would be significantly more and mere compensation for inflation is not sufficient, and the basic norm itself would require to be reset for plants which are over 10 years old.
- vii. the substantial replacements and renovations would be necessary and these do not occur every year evenly, and the O&M expenses to be allowed have to be upon due and proper consideration of all such relevant factors.
- viii. the costs of consumables are also related to current costs and are significantly on the increase, and that salaries and operating expenses (including regulatory and legal costs) have increased sharply over the years.
- ix. the O&M escalation of 6.69% for the 1st to 10th year was on the basis of the inflation in the then relevant period. The Commission failed to consider the relevant subsequent period in determining the O&M escalation rate on the basis of WPI and CPI indices.
- x. the O&M expenses ought to be allowed at not less than 50 lakhs / MW for the 11th year of operation. For subsequent years, the O&M be escalated at the weighted average inflation rate considering WPI : CPI :: 60:40 during the period from 2009 to 2014.

96. The Respondent Commission vide the Impugned Order-2 observed that:

For the above reasons, the Commission determines to continue the existing O&M norm of 5.5 % of Capital Cost for the base year with an annual escalation of 6.69% for Biomass Power Projects for the computation of fixed cost for 11th -20th year of operation. This effectively works out to 10.50% of the original Capital cost of Rs. 4 crore per MW. This also works out to 37% of the depreciated capital cost of Rs 1.13 Crore per MW at the beginning of the 11th year, which is adequate in the Commission's view."

97. The Respondent submitted that majority of the Biomass Projects are commissioned on or before 2004 and hence the data based on which APERC arrived at O&M expenses as 4% is completely reasonable. Further O&M escalation parameter takes into account the increased O&M expenditure for subsequent years. Since most of the biomass plants are commissioned during 2001, the following may be noticed in respect of raise in O&M expenses as per the APERC orders dated 22.06.2013 & 19.07.2014.

Year	O&M expenses in lakh/MW	Year	O&M expenses in lakh/MW
2001	22	2011	42.03
2002	23.47	2012	44.85
2003	25.04	2013	47.85
2004	26.71	2014	51.05
2005	28.50	2015	54.46
2006	30.41	2016	58.10
2007	32.44	2017	61.98
2008	34.61	2018	66.13
2009	36.93		
2010	39.4		

98. It was also added by the Respondent that as seen from the above, the O&M expenses arrived for the year for FY:2017-18 as per the APERC orders dated 22.06.2013 & 19.07.2014 is Rs.66.13 Lakhs/MW, which is much higher than the O&M expenses fixed by CERC@ Rs.40 lakh/MW for FY: 2017-18. In the light of the above submissions, the request of the petitioners that O&M cost shall not be less than 50 Lakhs/MW (equivalent to 12.5% of capital cost) for 11th year of operation & escalated at the weighted average inflation rate considering WPI : CPI :: 60 : 40 during the period from 2009 to 2014 is not justified and also requested to fix the O&M expenses as 4% of capital cost & escalation as 5.72%.

99. This Tribunal vide Judgement dated 20.12.12 (para 31.4) has decided that:

“ix) We agree with the Chairman and Member-Finance that the O&M expenses for the biomass plants need to be raised due to following factors:

a) Biomass plants are smaller in size and highly labour oriented requiring higher employees and administrative expenses per MW compared to a conventional fuel based large size plant.

b) The repair and maintenance expenses of the biomass plants is higher on account of number of operational problems being faced due to quality of biomass fuel as indicated in the preceding paragraphs.

c) Cost of insurance has also to be included in the O&M expenses.

Considering all the above submissions, we feel that the O&M expenses including insurance of 5.5% of the capital cost will be reasonable for the first year of the control period 2004-09.

x) Chairman and Member-Finance have not given any reason for fixing O&M escalation at 6%. Ld. Senior counsel for the licensees has also pointed out that the escalation decided by the Chairman and Member-Finance is not based on any price indices. We feel that the annual escalation should be fixed based on the actual WPI and CPI indices for the period 2004-09. We direct the Commission to fix the O&M escalation for the control period on the basis CAGR for the period 2004-09 of actual WPI and CPI indices giving 60% weightage to WPI and 40% to CPI.”

100. The Appellant has cited different reasons for having grievances from the Impugned Order-2 and asked for minimum of Rs. 50 lakhs per MW, however, failed to give justification for arriving at such figure. On the contrary, the Respondent has indicated year wise O&M charges derived on the basis of the Impugned Order-2.

101. At this stage, we do not find any infirmity in the Impugned Order-2 and therefore cannot accept the prayer of the Appellant.

Summary of our Findings

102. As decided in the foregoing paragraphs the following is summarised 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 revised escalation |

Index as per directions.

b) Fuel Cost Issue for Bagasse based Plants (Appeal 297)

- 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 the 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

103. We also direct the State Commissions (APSERC 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 within 45 days of communication of this judgment.

In view of the disposal of the Appeals, the relief sought in pending IAs, if any, do not survive for consideration and accordingly stand disposed of.

No order as to costs.

**PRONOUNCED IN THE VIRTUAL COURT THROUGH VIDEO
CONFERCING ON THIS 8th DAY OF MARCH, 2022.**

(Sandesh Kumar Sharma)
Technical Member

(Justice R.K. Gauba)
Officiating Chairperson

REPORTABLE / ~~NON-REPORTABLE~~

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