BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS NO. 33-36, SECTOR-4, PANCHKULA-134113, HARYANA

Case No. HERC/PETITION NO. – 52 of 2021
Date of Hearing : 27.01.2022
Date of Order : 21.03.2022

IN THE MATTER OF

Determination of fuel cost for renewable energy projects set up / to be set up in Haryana viz. Biomass, Paddy Stubble, Biogas, Biomass Gasifier & Bagasse / Non-bagasse (cogeneration). on the basis of parameters, except fuel cost, provided in the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2021- Suo Motu.

Quorum

Shri R.K. Pachnanda **Chairman**
Shri Naresh Sardana **Member**

ORDER

Brief Background

1. The Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2021, notified on 30.04.2021 (hereinafter referred to as "the HERC RE Regulations, 2021"), provides for the terms and conditions and the procedure for determination of tariff of the Renewable Energy (RE) generators in Haryana.

2. As per regulation 6 (1) of the HERC RE Regulations, project specific tariff on case to case basis may also be determined by the Commission for the following types of projects: -

   (a) Processed Municipal Solid Waste (WtE) Projects
   (b) Poultry litter / Cow dung etc.
   (c) Small / micro hydro power projects of 25 MW and below
   (d) Renewable energy with storage projects
   (e) Biomass project other than that based on Rankine Cycle Technology application with water cooled / air cooled condenser

(f) Non-fossil fuel-based co-generation project
(g) Any other new renewable energy technologies that may be approved by MNRE i.e. Solid oxide fuel cell (SOFC) etc.

3. Section 61 read with section 181 (2) of the Electricity Act, 2003 casts a statutory obligation on the State Commissions to promote co-generation and generation of electricity from renewable sources of energy and to make Regulations, by way of notifications, to carry out the provisions of the Act.

4. Regulation 7 (1) of the HERC RE Regulations provides as under:-

"The Commission shall determine the indicative tariff on the basis of suo-motu petition at least six months in advance at the beginning of each year of the Control period for renewable energy technologies for which norms have been specified under the Regulations."

5. Regulation 9 of the HERC RE Regulations specifies the tariff design as under:-

"(1)The generic tariff, for the control period as per these Regulations, shall be determined, for the entire tariff period/useful life of the project.

Provided that for renewable energy projects having single part tariff with two components viz. fixed cost component shall be determined on levelized basis considering the year of commissioning of the project while fuel cost component shall be determined on annual basis and the same shall also be prospectively (i.e. from the date of the Order) applicable for the projects commissioned during the previous control periods.

…….

(2) For the purpose computation of levellised tariff, the discount factor equivalent to weighted average cost of capital {Term Loan (R) and Return on Equity (RoE)} shall be considered i.e. {(R x 0.7) + (RoE x 0.3)}.

(3) The above principles shall also apply for the determination of project specific tariff under these Regulations."

6. The Commission in its orders dated 27.01.2021 (HERC/PRO-50 of 2020 and HERC/PRO-51 of 2020, in the matters of M/s. GEMCO and M/s. Starwire) and 03.03.2021 (HERC/PRO-47 of 2020, in the matter of M/s. Sri Jyoti), had decided as under:-

"The Commission is in the process of issuing RE Regulations, for the control period from FY 2021-22 to FY 2024-25. Accordingly, the tariff shall be charged

by the Petitioner, for the energy supplied, during the control period from FY 2021-22 to FY 2024-25, in accordance with the provisions contained in these Regulations including dispensation on 'fuel cost' for the projects already commissioned prior to the FY 2021-22. Till then the fuel cost shall be frozen at the FY 2020-21 levels as per HERC Order dated 9.10.2015 for the projects commissioned in the FY 2013-14. It is added that, hence forth, the Commission shall determine 'fuel cost' on an annual basis for the RE Projects set up / to be set up in Haryana so as to ensure that fuel cost remains aligned to the prevailing market conditions."

7. The Commission, after due deliberation, is of the considered view that in accordance with Regulation 6 of the HERC RE Regulations, it would be appropriate for the Discoms to procure power through competitive bidding route under section 63 of the Electricity Act, 2003. Hence, the Commission has confined the present order to determination of fuel cost for biomass, co-generation bagasse / biomass, biogas, bio gasifier and paddy straw / stubble-based power-based projects.

8. The Commission is conscious of the fact that the norms, as per the RE Regulations in vogue, are applicable for the RE Projects set-up / to be set up in Haryana up to a capacity of 2 MW. However, Regulation 7(e) makes an exception for determination of tariff for RE Projects of higher capacity as well where the tariff is generally determined through competitive bidding process, subject to the additional data / information that the Commission may require.

9. The Commission, in accordance with the provision of Regulation 9(1) of the HERC RE Regulations in vogue as well as orders of the Commission dated, 27.01.2021 and 03.03.2021, considered it appropriate to suo-motu initiate the process of determination of fuel cost of RE Projects mentioned in para 7 of this order, for the FY 2021-22 and FY 2022-23. The fuel cost determined in this order shall be applicable for the projects up to 2 MW commissioned during the FY 2021-22 and 2022-23 as well as projects to whom generic tariff was made applicable, although commissioned during the previous control periods.

10. In order to assist the Commission in assessing the quantum and delivered cost of paddy stubble and bagasse at the power generator's site, in Haryana, a work order no. 502/HERC dated 18.05.2021 was issued to the MD University, Rohtak. MDU, Rohtak had submitted their final report, vide letter no. DAA-1668 dated 10.11.2021. On the basis of the report of MDU, Rohtak, the Commission proposed the cost of paddy straw as Rs. 3113.14/MT (square bale upto 25 KM) and cost of bagasse as Rs. 2,000/MT, for the FY 2021-22 and FY 2022-23 (without any escalation). Accordingly, the cost of biomass fuel determined on the basis of weighted average cost of biomass and paddy straw mix in the ratio of 70:30, will come out to Rs. 3313.94/MT (Rs. 0.7x3400+0.3x3113.14).

11. The Commission issued a draft order proposing "*determination of fuel cost for renewable energy projects set up / to be set up in Haryana viz. Biomass, Paddy Stubble, Biogas, Biomass Gasifier & Bagasse / Non-bagasse (cogeneration). on the basis of parameters, except fuel cost, provided in the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2021"* and invited comments/suggestions/objections from the stakeholders on the fuel cost (Rs./MT), which is different from the cost (Rs./MT) provided in the HERC RE Regulations, 2021 notified on 30.04.2021. A public notice was hosted on the website of the Commission stating the last date of submission of comments/suggestions/objections as 31st December, 2021.

12. In response, written comments/suggestions/objections were received from following stakeholders:-

a) Naraingarh Sugar Mills Ltd. (NSML) – 25 MW co-gen in Naraingarh.
b) Sainsons Paper Industries Ltd. – 5 MW biomass based in Pehowa.
c) Starwire Vidyut Pvt. Ltd. – 9.9 MW biomass based in Mahendergarh.
d) SAEL Ltd. (formerly Sukhbir Agro Energy Ltd.) – 15 MW Paddy straw based in Kaithal.
e) Hind Samachar – 15 MW Paddy straw based in Pehowa.
f) Dr. Deipa Singh, Advocate on behalf of Non-Fossil Fuel based co-generation plants (including M/s. Oasis Commercial Pvt. Ltd.).

The Comments filed by the interveners/stakeholders have been reproduced hereunder:-

a) Naraingarh Sugar Mills Ltd. (NSML) – 25 MW co-gen in Naraingarh.

M/s. NSML has filed its comments on the cost of bagasse, paddy straw, biomass and biomass mix, to be used as fuel for generation of electricity. M/s. NSML has submitted as under:-

(A) Bagasse

During Season, usage of bagasse is permitted to run the co-gen plant and the purchase cost of Bagasse comes to be around Rs 2580/- per MT. In addition to bagasse cost, transportation cost in the vicinity of 75 kms works out to be around Rs.700/MT. The average cost of bagasse works out to around Rs 3280/MT. The same can be verified/confirmed from all the co-operative sugar and private sugar mills selling the bagasse.

(B) Paddy Straw

M/s. NSML has submitted that the availability of paddy straw is seasonal and the collection period is 45 to 50 days in a year. The same has to be collected during this and stored at different collection centers and later to be supplied to the power plant during the operation. NSML has submitted that its off-season requirement is around 1.50 lac MT. Collecting huge quantum of paddy straw per year is impossible to source from only vicinity because of the infrastructure or scattered lands of farmers growing paddy. In view of the above, the approximate price breakup involved in collection of the paddy straw includes following components:-

i) Collection cost- Rs 1600 – 1800 per MT

This includes cost for cutting, raking and bailing in the fields. Thereafter, loading, transporting and stacking at the collection centers within 10 kms radius of the collection area.

ii) Storing at the centers- Rs 150 to 200/- per MT

This includes land rent, security, electricity expenses, and firefighting equipment with water connection round the clock.

iii) Material loss due to storage – Rs 150 to 200 /- per MT

There is 10 to 15 % loss in material weight due to long storage, in the form of gross calorific value loss due to the material being exposed in rain and sun and thereby leading to the deterioration which is a natural tendency during storage and wastage losses due to material damage exposed to rain & sun etc.

iv) Average transportation of material cost- Rs. 600 – 700/- per MT

This includes loading of material at center, transportation and unloading at site. The cost is between 550 – 1000. A truck is able to transport only 1/3rd of its weighted capacity when it comes to paddy straw as it takes up all the space due to it being an extremely light and voluminous material due to less bulk density.

v) Chipping cost – Rs. 250 to 350/- per MT

Since the density of the material is less than 80kg/m3 and occupies huge volume, the chipping of light material is a laborious process. It involves much labour and special machinery to overcome the pollution emitted from dust during chipping. The cost includes specialized machinery , electrical supply and labour for processing . Other boilers unlike the one used in co-generation projects are designed to run specifically on paddy straw, hence do not need to chip the paddy but can simply be fed in the boiler, so they do not have this cost as such.

vi) Material loss- during processing – Rs. 100/- per MT.

Since the material contain dust due to fine particles, it flies away during chipping. The approximate loss during chipping process is around 5% and it comes around Rs. 100/- per mt.

Taking all of these costs together, the fuel cost comes to around Rs 2850 to Rs. 3350/MT and the average paddy straw cost works to be Rs 3100/MT.

(C) Other Biomass

M/s. NSML has submitted that its plant was given one year “must run status” with a condition to use paddy straw as primary fuel. In the State of Haryana, all the biomass power plants up to 10.0 MW capacity are given ‘must run’ status. Further, paddy straw based power projects are also given this status. Whereas, power plant of the NSML is of 25 MW capacity. So, the must run status was granted to it with a condition to use 75% paddy straw in the boiler and balance

25% of the feed stuck in the shape of other Biomass mix to address the stubble burning menace in the State. The available Biomass fuels other than paddy straw in the nearby region are rice husk, corn stalks and wood waste. The normative price exclusive of transportation cost, as submitted by HAREDA in the Commission on 14.09.2020, for the year 2020-21, is tabulated below:-

Area	Rice husk		Wood waste		Corn stalk	
	Min	Max	Min	Max	Min	Max
Panchkula	3500	4000	0	0	0	0
Kurukshetra	3000	5000	2000	3500	3000	5000
Ambala	3000	3500	6000	6500	0	0
Average market price	3167	4500	4000	5000	3000	5000

The transportation cost is additional and is in the range from 48 to 57.5/- per quintal.

From the above. The average Biomass cost excluding paddy straw is Rs 3445 per MT.

b) Sainsons Paper Industries Ltd. – 5 MW biomass based in Pehowa.

M/s. Sainsons Paper Industries Ltd. has submitted that they have installed a boiler and turbine to generate power from biomass which have been operating for the last few years. In order to determine the fuel cost, actual data for purchase of parali during the year 2020-21 and 2021-22, is tabulated hereunder: -

	Rs./kg	
	2020-2021	2021-2022
Av. Cost of purchase of parali during harvesting season (including season's collection target incentives and handling charges till feeding)	1.65 (Rs. 1.50+0.20+0.30)	1.90 (Rs. 1.50+0.10+0.30)
Av. Cost of purchase of parali after harvesting season till next harvesting season	1.75 (Till conveyor, thereafter, no handling expenses)	1.90

c) Starwire Vidyut Pvt. Ltd. – 9.9 MW biomass based in Mahendergarh.

M/s. Starwire has submitted as under:-

i) On 11.10.2012, the Central Electricity Regulatory Commission, constituted a Committee to undertake a detailed study on the "*Performance/Viability of Biomass based plants operating in the Country including the prevailing biomass prices*" which also included study of Station Heat Rate and GCV. The Committee deliberated and further collected information and data from different stakeholders and also visited sites of power developers to understand the different operations of the biomass based power plants. After extensive deliberations, the Committee submitted its Report to the Hon'ble CERC on 16.07.2013 and recommended as follows:-

*"2.1.22 The Station Heat Rate of **4200 Kcal/kWh** for station using travelling grate boilers and **4125 kCal/kWh** for stations using AFBC boilers be considered for determination of tariff of bio-mass power plants.*

…….

2.6.6. Considering the above, the Committee is of the view that the fuel pricing mechanism has to be proper for the operation of the Biomass power plants, else the sector will not be able operate properly. This is a major problem and concern of the Industry as also deliberated and submitted on various occasions. The Committee recommends that the fuel prices be fixed at the beginning of the year on independent survey, which can be conducted by State Nodal agency, which is already there in all states. This would be most transparent and amiable fuel price mechanism. However, the State nodal agency must ensure that the independent fuel price survey is conducted on time every year. This would end all confusion and problems currently being faced by the Biomass sector and is a rational solution to the fuel price fixing mechanism."

ii) This Commission took note of the findings of the learned CERC and while passing the RE Generic Tariff order dated 13.08.2014 for the RE Projects commissioned/ to be commissioned in the FY 2014-15 and the FY 2015-16, observed as under:-

"4.1 ……Further, exhaustive study has been got conducted by the CERC specifically for the biomass-based power projects with special reference to cost of fuel, GCV of fuel and SHR and the fact that these parameters have not been revised by this Commission as per second proviso to regulation 4 of HERC RE

Regulations, 2010. Thus, the Commission, to the extent feasible, has given due weightage to the CERC studies as well as biomass fuel cost data submitted by HAREDA while determining generic tariff for the RE power projects to be commissioned in FY 2014-15.

…..

4.5 ……..Thus the Commission, in the case of RE Power Plants to be commissioned in FY 2014-15 and FY 2015-16 where DPR has been approved by HAREDA and PPA signed and where fuel is involved, has determined fixed cost and fuel cost for the entire life of the project. Fuel Cost from second year onwards is subject to true – up in case the IPP claims that the cost of fuel has exceeded 5% escalation built in the tariff. In such cases the Commission, after detailed study including data on fuel cost compiled by the State Nodal Agency, shall consider additional fuel cost, if any, while passing the Generic Tariff Order(s) in the subsequent years……"

iii) In view of the above, this Commission on 12.08.2015 notified the HERC (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulation, 2010 (4th Amendment) Regulations, 2015 ("**HERC RE Regulations, 2015**") which were applicable to all the RE Projects commissioned / to be commissioned in the FY 2013-14, 2014-15, 2015-16 and 2016-17 in the State of Haryana (including the present Stakeholder which was commissioned on 03.05.2013, i.e. in FY 2013-14).

iv) Accordingly, this Hon'ble Commission revised the norms for Fuel Cost, SHR and GCV, in line with the norms specified by the learned CERC, as under:-

i) **Regulation 43: Fuel Cost –**

"(1) Biomass fuel price during the control period shall be Rs. 3055 / MT (Base Year FY 2014-15) subject to an escalation of 5% per annum for the projects commissioned/to be commissioned in the FY 2014-15 onwards.

Provided that the revised fuel price shall be applicable to the projects commissioned in FY 2013-14 prospectively from the date of notification of these Regulations.

Provided further that the fuel cost re-determined by the Commission for the first year of next control period shall also be applicable prospectively to the projects commissioned during current control period.

The fuel price Indexation Mechanism given in Regulation 44 shall not apply for Biomass based projects."

ii) **Regulation 37: Station Heat Rate –**

"The Station Heat Rate (SHR) for biomass power projects with travelling-grate boiler shall be 4200 kCal/kWh and for project with AFBC boilers, it shall be 4063 kCal/kWh. The revised SHR norms shall be applicable for the projects commissioned / to be commissioned in the FY 2014-15 onwards.

Provided that for the projects commissioned in the FY 2013-14 the revised SHR shall be applicable prospectively from the date of notification of these Regulations. For the period prior to date of notification of these Regulations, SHR shall be as per Principal Regulations.

Provided that the Generator/Distribution Licensee shall approach the Commission for appropriate reduction in the SHR, in case the Biomass based project uses fossil fuel as provided under Regulation 40 of the Principal Regulations."

iii) **Regulation 42: Calorific Value –**

"The Calorific Value of the biomass fuel used for the purpose of determination of tariff shall be 3100 kCal/kg for the projects commissioned in FY 2014-15 onwards. For the projects commissioned in FY 2013-14, the revised norms shall be applicable prospectively from the date of notification of revised Regulations."

v) The HERC Regulations, 2015 were made applicable prospectively from the date of their notification. SWIVPL has filed a writ petition before the Hon'ble High Court of Punjab & Haryana at Chandigarh, being CWP no. 25337 of 2015 (O&M), on the grounds stated therein and is presently pending before the Hon'ble High Court for hearing of the same.

The present objections, statements and pleadings made herein are without prejudice to the rights and contentions of SWIVPL including those contained in

the applicable regulations and orders and in the several pleadings, statements, submissions etc. made in all the proceedings filed by the SWIVPL challenging the HERC Regulations, 2015.

vi) On 24.07.2018, this Commission notified the HERC (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulation, 2017 ("**HERC RE Regulations, 2017**"). As per Regulation 5(2), the HERC RE Regulations, 2017 were applicable only to RE power plants with entirely new plant and machinery, which are commissioned / to be commissioned "*during the Control Period*". The "*Control Period*" under the said regulations is from the FY 2017-18 to the FY 2020-21.

vii) Under the HERC RE Regulations, 2017, the norms for Fuel Cost, Fuel Mix, SHR and GCV for plants commissioned during FY 2017-18 to the FY 2020-21 were specified as under:-

i) **Regulation 38: Fuel Cost –**

"(1) Biomass fuel price during first year of the Control Period shall be Rs. 3270 /MT and shall be escalated at the rate of 5% per annum for arriving at the levelised tariff for the entire useful life of the project.

Further, the Commission, for biomass / bagasse based power project, both existing and to be set up, may consider two part tariff wherein the fixed cost shall be the levelised tariff already determined for the existing projects and the fuel cost shall be as determined on a year to year basis so that the issue of fuel cost and escalation there to is addressed.

With an objective to utilize and thereby prevent burning of paddy straw / stubble in the farms, the Commission would like to promote use of the same in the power projects. Hence, while determining fuel cost / GCV on a year to year basis applicable for the existing as well as to be commissioned biomass / bagasse power projects, appropriate price weightage could be considered. HAREDA may provide the relevant data collected from the field for consideration of the Commission. However, the details of usage of paddy straw / stubble shall be certified by the IPPs and verified by HPPC based on the data emanating from the local authorities concerned.

Further, given the single fuel based generation for paddy straw / stubble based power projects in Haryana, working capital norms shall be accordingly determined.

ii) **Regulation 35: Fuel Mix –**

"(1) The biomass power plant shall be designed in such a way that it uses different types of non-fossil fuels available within the vicinity of biomass power project such as crop residues, agro-industrial residues, forest residues etc. and other biomass fuels as may be approved by MNRE.

(2) The Biomass Power Generating Companies shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements."

Regulation 36: Use of Fossil Fuel –

"(1) Use of Fossil Fuel shall not be permitted. The Project developer shall furnish monthly fuel (biomass mix) usage statement and monthly fuel (biomass mix) procurement statement duly certified by Chartered Accountant to the beneficiary (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring fuel consumption) for each month, along with the monthly energy bill.

(2) Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such biomass based power project. In such cases the PPA(s) shall be terminated and the Discoms (beneficiaries) shall be under no obligation to make any payments for the power supplied by the seller in breach of the regulation on fuel usage.

Provided that the bagasse based co-generation projects, selling power to the Discoms under PPA approved by the Commission, shall be permitted to use biomass as fuel during the non-cane crushing season. In such cases the generators can approach the Commission for determination of tariff for the power generated using biomass as fuel. The HPPC shall not refuse purchase of such power without the prior approval of the Commission."

iii) **Regulation 37: Calorific Value –**

"The Calorific Value of the biomass fuel used for the purpose of determination of tariff shall be 3100 (kCal/kg)."

viii) That this Commission has been consistently following the norms specified by the learned CERC with regard to biomass fuel cost for determination of generic tariff since the inception of Regulations in 2010.

ix) That the Hon'ble APTEL vide its judgment dated 29.04.2013 in Appeal nos. 63, 66 and 144 of 2012 has also approved this consistent practice by the State Commissions to adopt the specific norms as specified by the Central Commission for determination of variable charges in the respective State as the Central Commission has carried out detailed studies.

x) As per the draft discussion paper for determination of fuel cost for RE projects, the Commission has sought to consider the fuel cost of Rs. 3400 per MT as the cost of biomass fuel.

xi) That there is also no clarity in the draft discussion paper regarding the consideration of other norms such as Fuel Cost Escalation, Fuel Mix, SHR and GCV for plants commissioned during the earlier control periods of the various Regulations notified by the Commission from time to time.

xii) That the proposed fuel cost for renewable energy projects is sought to be determined under the HERC RE Regulations, 2021 notified on 27.04.2021. However, the said HERC RE Regulations, 2021 are infact applicable to only those RE projects "***with entirely new plant and machinery***" as per Regulation 5(2) of the HERC RE Regulations, 2021.

xiii) Further, as per Regulation 9 (1) of the HERC RE Regulations, 2021, the fuel cost component determined on annual basis under the regulations shall also apply prospectively to the projects commissioned during the previous control periods. Hence, as per the said HERC RE Regulations, 2021, it is only the fuel cost component which may be determined on an annual basis for the projects commissioned during the previous control periods. No other norms of the HERC RE Regulations, 2021 are to apply to the projects commissioned during the previous control periods in view of the specific provisions of Regulation 5(2) and 9(1) of the HERC RE Regulations, 2021.

FUEL COST:

xiv) The biomass fuel cost of Rs. 3400 per MT is unrealistic and not based on any State-specific market-based survey or study. The Commission in para 11 of the draft discussion paper has stated that it had appointed MD University, Rohtak

to submit their report regarding assessing the quantum and delivered cost of paddy stubble and bagasse at the power generator's site in Haryana. The Commission has further stated that on the basis of the report submitted by MDU, Rohtak, the Commission has accepted the cost of paddy straw as Rs. 3113.14/MT (square bale upto 25 KM) and cost of bagasse as Rs. 2,000/MT, for the FY 2021-22 and FY 2022-23 (without any escalation). Accordingly, the Commission has proposed the cost of biomass fuel on the basis of weighted average cost of biomass and paddy straw mix in the ratio of 70:30, as Rs. 3313.94/MT (Rs. 0.7x3400+0.3x3113.14).

xv) That neither any survey has been conducted in respect of the present stakeholder's project nor any information has been obtained by anybody from the stakeholder till date in respect of the cost of biomass fuel. The stakeholder is one of the only three independent biomass-based projects commissioned in the State of Haryana. Therefore, it was vital for the agency appointed by the Commission to, at the very least, obtain the necessary information in order to assess the quantum and delivered cost of paddy stubble and bagasse at the power generator's site in Haryana.

xvi) That the alleged report submitted by MDU, Rohtak, has never been made available in the public domain and is therefore, not a public document. No opportunity to rebut the contents of the said alleged report has been given to the stakeholders, till date. As such, it is squarely a violation of the sacrosanct principles of 'audi alteram partem'.

In this context, it is respectfully submitted that when the State Commission relies on a particular report by a technical expert or body, it must provide an opportunity to the affected party to deal with such report and make its submissions. The Hon'ble APTEL in the case of ***Dodson-Lindblom Hydro Power Ltd. Vs. Maharashtra Electricity Regulatory Commission & Anr.*** (Judgement dated 23.12.2009 in Appeal No. 151 of 2009) has held as under:

"10) …….

The appellant is aggrieved that in disallowing the R&M expenditure claimed the ***Commission has solely relied upon the report of a technical expert*** *Mr. V.V.R.K. Rao without any opportunity being given to the appellant to respond*

to the report or for any discussion or hearing either before Mr.V.V.R.K.Rao or before the Commission in respect of the report. ……

…….

11) It is clear from the portion of the impugned order extracted above that ***the Commission has based its decision entirely on the report of Mr.V.V.R.K.Rao****. The Commission has not considered what part of the claim towards R&M expenditure should be allowed as pass through on any individual analysis of its own. It has entirely gone by the report of Mr. V.V.R.K.Rao.*

……

13) ***The fact remains that the appellant was not provided with an opportunity to make any submission regarding the report of Mr.V.V.R.K.Rao. Nor did Mr.V.V.R.K.Rao hear the appellant. In this regard we find that the appellant is rightly aggrieved and that appellant needs to be given an opportunity to explain its position vis-à-vis the report of Mr.V.V.R.K.Rao****."*

The Stakeholder is deeply prejudiced due to non-furnishing of the alleged report submitted by MDU, Rohtak as referred to in the draft discussion paper. Hence, no reliance can be placed on a document that is not available in the public domain.

xvii) That as per the HERC RE Regulations, 2015, the tariff determined in case of SWIVPL was valid for the entire duration of 20 years i.e., the tariff period specified under the PPA dated 22.06.2012 executed between SWIVPL and HPPC. This includes the norms such as Fuel Cost, Fuel Cost Escalation, Fuel Mix, SHR and GCV. However, if at all this Commission is inclined to determine the fuel cost component on annual basis of existing biomass projects under Regulation 9 (1) of the HERC RE Regulations, 2021, such determination can only be carried out on the on the basis of prevailing biomass fuel price which may be fixed after carrying out a State-specific study. Such study has to be limited to the cost of biomass fuel price.

xviii) In the above context, reliance is placed on the Hon'ble APTEL's judgement dated 23.03.2015 in O.P. No. 3 of 2012, where it has given the following directions to the State Commissions, including this Hon'ble Commission-

"***17.*** *Accordingly, this Tribunal deems it appropriate to give the following directions to the State Commission for future determination of tariff for Biomass based power projects:-*

i) *The State Commission shall determine two part tariff i.e. fixed and variable charges in respect of Biomass based power projects instead of single flat energy tariff. The fixed charges may be determined for the life cycle of Biomass power projects.* ***However the variable charges may be determined periodically on the basis of prevailing Biomass fuel price which may be fixed after carrying out a State specific study. The fuel price may be determined annually though an independent study****. Alternatively fuel price may be determined for the first year of the Control Period of say 2 to 3 years with percentage annual escalation linked to appropriate indices for the subsequent years of the Control Period. At the end of the Control Period, the fuel price may be re-determined for the first year of the next Control Period..."*

xix) That the fuel cost of Rs 3400 per MT considered by the Commission as cost of biomass fuel in the draft order is unrealistic as the cost of all inputs have gone up drastically. The two main costs contributing towards the cost of biomass are labour cost and diesel costs other than the amount of money which is paid to the farmer for the biomass fuel. Further, it is to be borne in mind that biomass fuel has inherent moisture and dust which cannot be removed, thereby resulting in higher cost due to low calorific value of the fuel. The Commission has been following the norms specified by the learned CERC with regard to biomass fuel cost for determination of generic tariff since the inception of Regulations in 2010. The learned CERC has published biomass fuel cost for the State of Haryana which is at Rs. 3975 per MT for the FY 2021-22 and thereafter, an escalation of 5% is applicable for the subsequent years. The Commission in several orders has mentioned that it has been largely following learned CERC's norms with regard to fuel cost and hence it is only prudent that the fuel cost as determined by learned CERC should be followed in the absence of any market

based fuel study/ research conducted in the State. The fuel cost determined by the Commission under its regulations/orders vis-a-vis as determined by the learned CERC are tabulated under:-

FY	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23
HERC - Fuel Cost	3055	3208	3368	3270	3434	3606	3786	3000	
CERC - Fuel Cost for State of Haryana	3055	3208	3368	3270	3434	3606	3786	3975	4173

xx) The order of the Commission reducing the fuel cost escalation from 5% to 2.93% does not match with the rise in input costs and the inflation in the country. The Stakeholder would like to point out that not allowing escalation in the fuel price from FY 2021-22 to FY 2022-23 will result in lack of proper fuel cost as the increase in two main input costs relating to biomass fuel (labour cost & diesel) at present times would result in steep increase of fuel costs. Under these circumstances, it would be very difficult to procure fuel by biomass power plants and huge quantity of fuel may be available with farmers to burn in their fields thereby causing pollution.

xxi) That as per latest notification of the Government of India, all fossil fuel plants also have to utilize 10% biomass fuel and the same is allowed as cost pass through the generator NTPC for the amount of biomass fuel being used by them. This has resulted in steep price rise of biomass fuel cost.

FUEL MIX:

xxii) With regard to existing plant which have already been commissioned in earlier control periods, it may be noted that changing the fuel mix by providing 30% weightage to paddy straw will be forcing the plants to operate with fuel beyond what they have been designed for. The Regulations also provide that the biomass power projects should be designed to utilize multiple fuels available within the vicinity of the plant. Paddy straw is not cultivated all over the State of Haryana and hence allocating 30% weightage to paddy straw for fuel cost determination would result in forcing plants to source biomass fuel from far away places while ignoring the biomass available in the vicinity of the plants.

The findings of the Commission in its order dated 13.08.2014 on this specific issue may be taken note of:

"10. The Commission observes that in the case of biomass based RE projects ***availability of fuel at a reasonable cost is a critical issue****. Hence HAREDA, while approving DPR for biomass based RE Projects, should ensure that* ***a minimum distance of 50 KM is maintained between such projects. In its absence biomass based RE projects may become unviable vis-à-vis other non – solar RE projects due to the fact that the Commission has put a cap on the biomass fuel cost****."*

xxiii) That the present project was set-up pursuant to the invitation issued by the Haryana Renewable Energy Development Agency, Govt, of Haryana {"**HARERA**") under the "*New Investor Friendly Policy for promoting generation of power from Renewable Energy Sources*" announced vide Haryana Govt. Notification no. 22/69/2005-5P dated, 23rd november, 2005. The said invitation issued by HARERA was based on the actual data of biomass in the State of Haryana and biomass assessment studies were conducted in 24 blocks of the State under National Biomass Resources Assessment Programme of Ministry of Non-Conventional Energy Sources (MNES), Govt. of India (GOI) in the Mahendergarh Block of Mahendergarh District of Haryana (where present Stakeholder is set-up), which shows that the area/ district/block of Mahendergarh, Haryana does not have any paddy in cropping pattern nor has surplus biomass of paddy for setting up biomass power plant.

xxiv) That the non-availability of paddy straw in Mahendergarh District, Haryana is further evidenced from the biomass assessment studies conducted by HAREDA in April, 2010. Further, since paddy straw is not available in the vicinity of the plant, most projects have not considered the same at the time of designing of the plant. Learned CERC had conducted a study in 2014 and thereby allowed a higher capital cost for plants based on paddy straw and julia flora due to the complex nature of the fuel. The stakeholder submits that the average GCV of paddy straw is much lower than the average GCV of 3100 kCal/kg of biomass fuel. If at all the Commission decides to provide 30% weightage to paddy straw then it would only be prudent to take into account the

additional capital cost involved for changing the design of the existing plants, the increase in station heat rate to utilise paddy straw, the actual landed cost of paddy straw for plants located in areas where paddy is not grown and appropriate change in GCV as per the weightage due to low GCV of paddy straw.

xxv) That the Commission in the draft discussion paper has stated that the report submitted by MDU, Rohtak recommends for a cost of paddy straw at Rs. 3113.14/MT, provided the same is procured in square bales and transported from a distance of 25kms. It is respectfully submitted that the closest area for paddy straw available from SWIVPL's plant at Mahendergarh is 170-190 kms resulting in an additional transportation cost of approx. Rs. 1570/MT over and above the cost calculated by MDU, Rohtak, which has not been factored in. The capital cost required to be incurred to utilize 30% paddy straw in SWIVPL's plant would be Rs 700-800 lacs. The fuel feeding system would need alteration, new equipment for handling of paddy straw would be required, the superheater coils would need to be changed as the melting point temperature of paddy straw ash is much lower as compared to other biomass fuels available within the vicinity of SWIVPL's plant and many other design changes would have to be made. Further, the plant would have to be shut for approximately 25-30 days for necessary modifications to be implemented. The capital cost incurred for making these changes should be allowed as a pass through. SWIVPL's plant if at all with current design of plant, would be able to utilize not more than 5-6 % of paddy straw fuel currently if mixed with other biomass fuel available within the vicinity of the plant only after it is chipped to a size of 15-20 mm. The cost for chipping of paddy straw is approximately Rs 827/-per MT. The procurement of paddy is only possible if the actual landed cost of the same is considered by the Commission. It may be also noted that the Commission has allowed a higher capital cost for plants based on paddy straw and julia flora in its earlier Regulations. Hence, if it was possible to utilize paddy straw and julia flora to such high extents as much as 30% of the biomass fuel mix in the existing plants as per draft order of the Hon'ble Commission, then the need for a higher capital cost would not have arisen at all. Further, the State has already allocated projected based on paddy straw and paddy stubble in the State and hence, it

is only prudent that the biomass fuel mix not be changed so that paddy straw fuel can be used by the plants coming up in the State.

xxvi) Paddy straw bales currently are being sold by the farmers at a price of Rs. 4400 - 4500 per MT from their fields. After purchase of the same, various costs viz. transportation, storage, chipping and handling costs, is to be incurred.

STATION HEAT RATE:

xxvii) That the Station Heat Rate of 4200 kcal/kWh (travelling grate with water cooled condenser) has already been determined for plants commissioned in the FY 2013-14. The SHR determined in the HERC RE Regulations, 2021 is for plants being commissioned in FY 2021-22 to FY 2024-25. The Station Heat Rate cannot be changed for plants which have already been commissioned as huge amount of capital cost would have to be incurred to change the design of the existing plants to be able to operate at the new Station Heat Rate. Further, with passage of time, the efficiency of the plants have reduced, thereby increasing the Station Heat Rate unless high capital cost is incurred to retain or improve the same. Also change in SHR already determined as per HERC RE Regulations, 2015, shall amount to review of the same which is not the case. The matter at hand is only for determination of biomass fuel cost.

GROSS CALORIFIC VALUE:

xxviii) That the GCV for paddy straw is lower than that of biomass fuel mix and if 30% weightage is provided to paddy straw then the GCV of fuel will also have to be corrected taking into account equal weightage for GCV of paddy straw. Over the years SWIVPL has regularly tested paddy straw and the average GCV of the same is 2520 kcal/kg. The average GCV of biomass fuel is 3100 kcal/kg as per the HERC Regulations and orders. Hence GCV at a 70:30 fuel mix (biomass : paddy) works out to 2905 kcal/kg ((3100*0.7)+(2450*0.3)).

xxix) That the Commission may adopt the norms of fuel cost as determined by the Hon'ble CERC in their entirety, as has also been done in the past for determination of fuel cost for the existing projects, or it may consider carrying out extensive market based studies based on actual ground realities, as directed by the Hon'ble APTEL vide its judgement dated 23.03.2015 in O.P. no. 3 of 2012. We would further submit that changing the fuel mix, fuel cost

escalation, SHR and GCV would amount to amending Regulations on the basis of which the fixed cost for the life of the project has already been determined and hence the norms determined by CERC with regard to fuel cost and fuel cost escalation may be adopted.

d) SAEL Ltd. (formerly Sukhbir Agro Energy Ltd.) – 15 MW Paddy straw based in Kaithal.

M/s. SAEL has submitted as under:-

A. Specific clarification in clear terms is required that fuel cost determined in the present draft order shall not only be applicable for the projects up to 2 MW commissioned during the FY 2021-22 and FY 2022-23 but also to RE projects of higher capacity commissioned during the said period.

The aforesaid clarification is necessitated due to lack of clarity being reflected in the highlighted portion in para 9 and para 10 of the said draft order as indicated below:

"9. The Commission is conscious of the fact that the norms, as per the RE Regulations in vogue, are applicable for the RE Projects set-up to he set up in Haryana up to u capacity of 2 MW. However, Regulation 7(e) makes an exception for determination of tariff for RE Projects of higher capacity as well where the tariff is generally determined through competitive bidding process, subject to the additional data / information that the Commission may require. However, for all such projects, the cost of fuel (Rs / MT) shall remain the same. Depending on the case specific technical parameters i.e. SHR, GCV, Auxiliary Energy Consumption or Specific Fuel Consumption, if at variance from the norms specified in the RE Regulations in vogue, the fuel cost in terms of Rs / kWh of the sent out units may vary.

10. The Commission, in accordance with the provision of Regulation 9(1) of the HERC RE Regulations in vogue as well as orders of the Commission dated 27.01.2021 and 03.03.2021, considered it appropriate to suo-motu initiate the process of determination of fuel cost of RE Projects mentioned in para 8 of this order, for the FY 2021-22 and FY 2022-23. The fuel cost determined in this order shall be applicable for the

projects up to 2 MW commissioned during the FY 2021-22 and 2022-23 as well as projects to whom generic tariff was made applicable although commissioned during the previous control periods."

Although the provisions under Regulation 7(e) of the tariff regulations of this Commission for determination of tariff for RE Projects of higher capacity as well where the tariff is generally determined through competitive bidding process, have been taken cognizance of in the draft order, the draft order does not clarify its applicability and makes provision for fuel cost applicable to RE projects of capacities higher than 2 MW. The draft order is accordingly liable to be clarified to include RE projects of capacity higher than 2 MW.

B. The fuel cost of paddy straw-based projects should be reconsidered and revised for FY 2021-22 and FY 2022-23 mainly due to below mentioned grounds amongst others:

(a) The Central Electricity Regulatory Commission (CERC) in its order dated 31.5.2017 passed in Petition no.05/SM/2015, while determining the generic tariff for all RE based projects, has approved a normative fuel cost of Rs. 3605.61/MT for FY 2019-20 with an escalation 5% annually. Applying the aforesaid escalation, the fuel cost for the FY 202021, FY 2021-22 and FY 2022-23 comes to Rs.3785.89/-, Rs.3975.18/- and Rs.4173.93/- respectively. As such, the fuel cost as proposed to be set by this Commission in its draft order is not in conformity with the norms set by the learned CERC;

(b) Fresh Paddy straw's GCV is around 3100 kcal/kg, and moisture is varying from 20% to 35%. For a 15 MW project, SAEL Ltd. is required to procure more than 2.0 Lakh tonne of paddy straw in one month's time for next 12 months. This fuel is then required to be stored in 100 acres of farmer's land which is in low lying area. Farmers usually do not allow to raise the height of the farming land. During, rainy season, this stored fuel is dipped by nearly one meter in water which results in loss of fuel. Also stored paddy straw degrades with time [25% GCV (quality)] degradation annually which has to be considered in fuel pricing. Further, during loading/unloading of paddy straw bales, loose paddy straw is generated which is to be also related

to cost of fuel. Loose paddy straw formation is nearly 15% of total quantity. Further, the top three layers of fuel also decays due to hot summer which also results in fuel loss of around 8-10%. Further, labour rates also vary due to various reasons (during seeding time, cutting time of crop, festival time, marriage) along with many other hidden cost, like usage of JCB, Hydra, tractor in raining season which are necessarily to be considered at the time of determination of final fuel cost of a project.

(c) In view of the aforesaid, SAEL Ltd. proposes to adopt the normative fuel cost as had been determined in its order dated 20.12.2019 while determining the levelized generic tariff for RE based generating stations and their norms for operation. While issuing the said order, this Commission has considered the Survey Reports submitted by HAREDA which have indicated a minimum average fuel cost of paddy straw at Rs.3336.94/MT and a maximum average fuel cost of Rs.4201.806/MT for the FY 2019-20. This Commission, after analyzing the submissions of HAREDA has concluded that the average fuel cost submitted by it has wide variations in circle rates and accordingly, has deemed it appropriate to retain the norms prescribed by the learned CERC as under:

"The Commission observes that the cost of biomass considered by CERC for Haryana for FY 2019-20 is Rs.3605.61 / MT while HAREDA has submitted minimum average of Rs 3336.941 / MT and Maximum Average of Rs. 4201.806/MT. Hence, after considering escalation of 5% for FY 2018-19 and FY 2019-20, the fuel cost as per HERC Regulations will also reach the CERC levels and about the mid value of price range submitted by HAREDA. Hence, the Commission has considered the biomass fuel cost as per the HERC RE Regulations including the fuel price escalation factor of 5% per annum."

(d) As such, this Commission had approved a normative fuel cost of Rs.3605.61/MT for FY 2019-20 in line with the learned CERC with an annual escalation of 5% i.e. Rs.3785.89/MT for the FY 2020-21 considering the permitted rate of escalation, which is liable to be adopted in the draft order.

e) Hind Samachar – 15 MW Paddy straw based in Pehowa.

The Comments filed by M/s. Hind Samachar are similar to the comments filed by M/s. SAEL. Hence the same are not reproduced again, for the sake of brevity.

f) Dr. Deipa Singh, Advocate on behalf of Non-Fossil Fuel based co-generation plants (including M/s. Oasis Commercial Pvt. Ltd.).

Dr. Deipa Singh, learned advocate appearing on behalf of M/s. Oasis Commercial Pvt. Ltd., has submitted as under:-

I. That the Fuel Cost (Rs. / per MT) of a Non Bagasse based Co-generation Plant has been determined at Rs. 3,313.94/ per MT of fuel i.e., a 70:30 mix of biomass and paddy straw as fuel. However, it is pertinent to mention that while estimating, calculating, adding and finalizing the various parameters involved in the determination of fuel costs as well as fuel handling charges, many important factors and costs have been both excluded and miscalculated.

II. That using a fuel, comprising of a 70:30 mix of biomass and paddy straw respectively, leads to a significant reduction in the total composite calorific value of the fuel (after blending), resultantly leading to a much higher consumption of the said fuel.

III. That using such a 70:30 fuel, not only increases the net cost of production per kWh generation of electricity/power, but also greatly increases the fuel handling charges associated with the usage, blending, feeding, storing, burning, etc. of the said 70:30 fuel.

IV. That since paddy straw, being a 30% component of the said 70:30 fuel, is a voluminous substance/product and thus requires larger storage tanks/facilities and also requires more maintenance than conventional fuel.

V. That as a result, not only does the net cost of production per kWh generation of electricity/power as well as fuel handling charges increase, but also the boiler cost also increases significantly, due to the multi fuel mix feed option that would have to be enabled/installed on the boilers in order to make them capable of producing electricity/power from the said 70:30 fuel.

VI. That the cost of acquiring biomass as well as acquiring paddy straw depends greatly on the season as well as the demand-supply of the said components of the fuel in the neighbouring areas of the project. The present cost of acquisition per MT of biomass is in the vicinity of Rs. 8000/- per MT.

VII. That moreover, the fuel cost as estimated in the draft, takes into account only the basic purchase price of the fuel i.e., biomass as well as paddy straw, and fails to take into account various other auxiliary expenses that are incurred by a power producer during the process of power production such as but not limited to:- transportation costs, handling costs, storage costs, fuel handling charges, feeding charges, maintenance charges, labour charges, etc.

VIII. That in the neighbouring State of Punjab, the Punjab State Power Corporation Limited (PSPCL) had entered into a Power Purchase Agreement dated 11.07.2012 with M/s NV Distilleries & Breweries (P) Ltd. Vill. Sandharshi, Teh Rajpura, Distt. Patiala, wherein PSPCL had granted the applicable tariff for Non-Fossil Fuel based Cogeneration Plant to the tune of Rs. 4.79 per unit, in the year 2012. That also, as per the RE Regulations for each subsequent year of tariff period following the year of commissioning, the aforementioned tariff was eligible to be escalated normatively at 5% per annum for determination of variable charge component of the tariff.

IX. That it is extremely difficult to procure fuel as per this Hon'ble Commission's (HERC) norm. However, this Commission may help and facilitate to procure paddy straw & rice husk at schedule price.

Subsequently, a public hearing was held on 05th January, 2022. The stakeholders present during the hearing mainly reiterated their written submissions, which for the sake of brevity has not been reproduced. However, HPPC, an important stakeholder in the matter, could not file its comments, due to ongoing COVID pandemic. Therefore, the Commission granted an opportunity to HPPC to submit its views on the draft paper and the comments/response of various generators. HPPC filed its reply vide its letter no. Ch-37/HPPC/SE/C&R-I/LTP-III/RE-Regulation dated 21.01.2022.

HPPC has submitted as under:-

i) That the generic tariff for the RE project under the HERC RE Regulations 2021 has to be determined within the four corners of ibid Regulations only. Determination of generic/normative variable cost considering the fuel cost proposed in a report has no effect and cannot be considered unless the Regulations are amended to that effect.

ii) That the variable cost determined in terms of HERC RE Regulations 2021 in vogue shall be applicable to all projects where generic tariff is applicable, irrespective of its date of commissioning and control period.

iii) That the generic tariff so determined under regulations shall not be applicable to projects whose tariff is/has been determined under section 62 of the Electricity Act, 2003. In such cases, the fuel cost has to be allowed by the Commission, on case to case basis, considering the actual cost of fuel with a ceiling of normative fuel cost as specified under the HERC RE Regulations.

iv) That the fuel cost component as per the fuel cost specified in HERC RE Regulations 2021 for respective technologies of biomass/bagasse/ biogas for the FY 2021-22 and FY 2022-23 has been worked out as under:-

Nature of Project	**Fuel Cost for FY 2021-22 as per existing Regulations (Rs/MT)**	**Fuel Cost component/ variable cost (Rs/kWh)**	
		FY 2021-22	**FY 2022-23**
Biomass (Air Cooled – Travelling Grate Boiler) Single Fuel (Paddy)	2,186.26	3.37	3.46
Biomass (Air Cooled – AFBC Boiler) Single Fuel (Paddy)	2,186.26	3.31	3.40
Biomass (Water Cooled – Travelling Grate Boiler) Single Fuel (Paddy)	2,186.26	3.29	3.39
Biomass (Water Cooled – AFBC Boiler) Single Fuel (Paddy)	2,186.26	3.23	3.33
Biomass (Air Cooled – Travelling Grate Boiler) Mixed Fuel	3,000.00	4.54	4.67
Biomass (Air Cooled – AFBC Boiler) Mixed Fuel	3,000.00	4.47	4.60
Biomass (Water Cooled – Travelling Grate Boiler) Mixed Fuel	3,000.00	4.44	4.57
Biomass (Water Cooled – AFBC Boiler) Mixed Fuel	3,000.00	4.37	4.50
Bagasse based Co-generation	1,027.00	1.80	1.85
Non-bagasse based Co-generation	3,000.00	3.81	3.92
Biomass Gasifier	3,000.00	4.17	4.29
Biogas	685	2.34	2.40

v) That the above tariff is applicable to respective RE Project from the date of applicability of HERC RE Regulations 2021 in terms of Commission's order dated 27.04.2021.

vi) That a considerable piece of evidence that puts serious doubts on the credibility of the report of MDU, Rohtak is the actual average fuel cost submitted by M/s Sainsons Paper Industries along with actual bills. M/s Sainsons Paper Industries, which is a running biomass based plant, vide letter dated 29.12.2021 addressed to the Commission has submitted the actual average cost of paddy straw which is in the range of Rs 1650/MT to Rs 1900/MT as against Rs. 3113/MT considered in the draft order. The fuel cost submitted in the report of MDU Rohtak, is apparently higher than the market price and seems to have been specified without considering the actual market conditions.

vii) That the draft fuel cost order does not provide generic tariff of small projects (upto 2 MW) commissioned during the Control period of HERC RE Regulations 2021. The Commission may consider specifying, the fixed cost for respective RE Project on levelized basis in terms of Regulation 9 of HERC RE Regulations 2021.

viii) That even if the revised fuel cost is considered by the Commission, the same will be applicable prospectively. For the period from 30.04.2021 i.e. from the applicability of HERC RE Regulations 2021 to date of such order/ amendment in Regulations, the fuel cost component applicable on the renewable projects set up/to set up in Haryana is required to be determined separately considering the fuel cost specified in Regulations. Fuel cost component applicable thereafter, may be considered as specified in an amendment to HERC RE Regulations for revised fuel cost.

ix) That non-issuance of the revision of variable cost in terms of HERC RE Regulations for respective projects, HPPC has to pay high variable cost claimed by generators considering variable cost corresponding to pre-revised fuel cost. The fuel cost in the control period for the RE Regulations, 2021 had to be lower with the advent of the regulations. This has led to excess payment to the various biomass and bagasse generators to the tune of Rs. 18 crores during the period from April, 2021 to November 2021 (FY 2021-22). The Commission may therefore; revise the fuel cost by carrying out the amendment in the RE Regulations and permitting recovery of the excessive fuel cost paid up till now by setting up a defined procedure for the same.

HPPC has further summarized the issues raised by generators/interveners and submitted its response on the same as under:-

1. **Hind Samachar Limited**
2. **SAEL Limited**

Issue No. 1

The generators have sought clarification regarding applicability of draft order for projects of capacity more than 2 MW.

HPPC's reply to issue no. 1

The norms specified in HERC RE Regulations 2021 are applicable on the renewable projects to be set up in the control period FY 2021-22 to FY 2024-25. Further, in terms of Regulation 9 of ibid Regulations, the fuel cost component determined under the ibid Regulations shall also be applicable for the projects commissioned during the previous control periods. **It is accordingly, understood that the variable cost determined in terms of HERC RE Regulations 2021 in vogue shall be applicable to all projects where generic tariff is applicable, irrespective of its date of commissioning and control period.**

It is further understood that the generic tariff so determined under regulations shall not be applicable to projects whose tariff is/has been determined under section 62 of the Electricity Act, 2003. In such cases, the fuel cost has to be allowed by the Commission, on case to case basis, considering the actual cost of fuel with a ceiling of normative fuel cost as specified under the HERC RE Regulations.

Issue No. 2

The generators have cited that normative fuel cost as determined in the Commission's generic tariff order dated 20.12.2019 in line with the CERC with an annual escalation of 5% be adopted for revision of fuel cost.

HPPC's reply to issue no. 2

The project developers are operating paddy straw based biomass generating plant. The tariff for both the projects was determined by the Commission under section 62 of the Electricity Act, 2003. The Commission had prudently, after examining the actual cost of paddy straw based fuel purchased by similarly placed generator namely M/s Sainsons Paper Industries Pvt. Ltd., considered fuel cost of Rs. 2082 per MT for FY 2020-21 for the purpose of tariff determination. M/s Sainsons Paper Industries Pvt. Ltd. in its recent submissions dated 29.12.2021 has submitted that average cost of

purchase of parali/paddy straw is Rs. 1.75 per kg and Rs. 1.90 per kg for year 2020-21 and 2021-22 respectively. Thus, the market cost of paddy is even lower than the fuel cost considered by the Commission for the purpose of determining tariff of 15 MW projects each of Hind Samachar Limited and SAEL Limited.

It is a settled principle of law that generators are responsible for operating the plant with prudent utility practices. The fuel purchase and handling thereof thus also to be prudent. The generator, as a matter of right cannot claim excess fuel cost citing normative/generic parameters specified by Commission and burden the consumers at large.

Regarding fuel escalation factor, it is submitted that the Commission has consciously specified annual escalation rate of fuel as 2.93% considering the weightage of 55% and 45 % to actual WPI and CPI respectively. The methodology was adopted by the Commission vide order dated 04.08.2015 at the instant of biomass project developers.

Issue No. 3

GCV of paddy straw deteriorates with time with storage due to moisture, rainy season.

HPPC's reply to issue no. 3

The Commission has consciously specified GCV of various biomass in the HERC RE Regulations, 2021.

In this context, it is submitted that the Central Electricity Regulatory Commission (CERC) constituted a Committee on 11th October, 2012 under the Chairmanship of the Secretary, CERC to undertake a detailed study on the "Performance/Viability of Biomass based plants operating in the Country including the prevailing biomass prices". The Committee recommended following normative parameters for determination of generic tariff:

ii. Gross Calorific Value (GCV): 3100 kcal/kg

iii. O&M expenses:Rs. 40 Lakh/MW

iv. Auxiliary Consumption:

a. 10% with water cooled condenser, and

b. 12% for air cooled condenser

v. Capital Cost (excluding evacuation cost and cost of water cooled condenser considered):

a. For project with water cooled condenser: Rs. 540 Lakh/MW

b. For project with air cooled condenser: Rs. 580 lakh /MW

c. For rice straw based project: Rs. 630 lakh/ MW

vi. <u>Biomass Price:</u> to be decided annually by a committee to be formed at State level representing State Commission, Nodal Agency, Government.

The objective behind constitution of Committee and its role was defined as under:-

i. Assessment and evaluation of technical parameters like: Heat rate, Auxiliary Consumption, through performance assessment biomass plants commissioned in various states of India;

ii. Fuel analysis (both Proximate and ultimate analysis) of different biomass fuel by taking fuel and ash sample collected from different plants to arrive at representative value of GCV and moisture variation for different fuel;

iii. Analysis of losses in calorific value of fuel during storage;

iv. Evaluation of trend in the biomass power plant operation like break-up of fuel consumption (biomass types usage trends), generation v/s specific fuel consumption, PLF v/s Auxiliary Consumption;

v. Analysis of O &M expenses of the commissioned plants;

vi. Analysis of the Capital cost of the commissioned plants;

vii. Surplus biomass available for energy production;

viii. Study on prevailing Biomass prices and price trend in various states;

ix. Measures for viability of biomass plants.

x. Recommendation for removing the present hurdles coming in the sector for promoting the growth of the Biomass sector.

Subsequent to recommendations of the Committee, comments were invited from all the stakeholders for finalizing the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) (First Amendment) Regulations, 2014. After considering objections of all stakeholders as regards GCV of Biomass Fuel, CERC held as under:-

"The Committee collected GCV details of various fuels used from the project developers located in the States of Hyderabad, Rajasthan, Gujarat and Punjab and based on the same recommended GCV in its Report. Some of the stakeholders are also in agreement with Commission's proposal which was based on the Committee Report. Some of the stakeholders have suggested further reduction in GCV in the range of 2300 to 3000 kcal/kg. The Committee also recognised that the plants are keeping minimum inventory of various types of biomass for three to four months and

in this duration there is reduction in GCV due to various reasons like mixing of sand, mud and foreign materials, losses in handling, exposure to wind and rain etc. Such losses are between 7-10% for the entire year. Based on the above factors, the Committee recommended the normative GCV value for the Biomass Plants for determination of generic tariff as 3100 kcal/kg for mustard husk, rice husk and other kinds of biomass fuel under as fired condition. Considering the same, the Commission has decided to retain the norm as proposed in the draft Regulations which is also in line with the recommendation received from MNRE (Given vide its letter dated 30th September, 2011) and as recommended in the CEA Report."

This Commission while notifying HERC (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate Regulation, 2010 (4th Amendment, 2015) took due note of the exhaustive study carried out by the CERC and held as under:

"In view of the exhaustive study done by the CERC including analysis of the comments filed by different stakeholder, this Commission consider it appropriate to adopt GCV of biomass fuel as 3100 kcal / Kg. for the purpose of tariff determination in the present case instead of repeating the entire exhaustive exercise already conducted by the Central Commission."

Further, MNRE vide its letter dated 30.09.2011 was of considered view that with better fuel management techniques such as proper levelling of ground for storage, proper drainage system and covering of fuel with tarpaulin, the total fuel losses during biomass storage can be targeted at about 1.65%-2%. Thus, there should be a provision of loss of fuel during storage at around 2% in the tariff order of various states for biomass based power plants. The Ministry finally suggested that the following general principles can be adopted for the GCV value:-

Biomass	**GCV (kCal / kg)**
Rice husk	3200
Straw / Stalks/ Other husks	3300
Plantation	2800

The Hon'ble APTEL in an Appeal filed by M.P. Biomass Developer Association, i.e. Appeal no. 211 of 2015 decided on 04.05.2016 made detailed analysis on the GCV of various Biomass fuels and considering the actual test results submitted by Deputy Commissioner, NRED, Bhopal and the report of the Committee discussed above

decide the Gross Calorific Value (GCV) of Biomass fuels as 3100 kCal/kg. The said figures have been adopted by the Hon'ble APTEL on the same rationale in recent order dated 18.02.2020 passed in Appeal No. 170 of 2016 titled as Biomass Power Producers Association, Tamil Nadu v TNERC and Anr.

In view of aforesaid details, it is evident that the GCV of 3100 kcal/kg considered by the Commission is liberal and prudent for specifying the generic norms.

Accordingly, the contentions of M/s Hind Samachar Limited and M/s SAEL Limited are devoid of merit and not worthy of consideration.

3. Starwire (INDIA) Vidyut Pvt Ltd. (SWIVPL)

Issue No. 1

Report of study conducted by MDU, Rohtak should have been made available in public domain giving an opportunity to the stakeholders to make any submission on the report.

HPPC's reply to issue no. 1

HPPC agrees with the contention of the generator.

Issue no. 2

Norms specified by the learned CERC in respect of biomass fuel cost be adopted by the Commission as per the in past practice. Biomass fuel cost of Rs. 3400/MT is unrealistic.

HPPC's reply to issue no. 2

The cost of biomass fuel is location specific and thus varies across States. The cost of biomass fuel in respective State can be assessed by carrying out a State Specific Study. In this regard, reference is invited to the Hon'ble APTEL's judgement dated 23.03.2015 in O.P. No. 3 of 2012 which is reproduced as under:-

"*17. Accordingly, this Tribunal deems it appropriate to give following directions to the State Commission for future for determination of tariff for biomass based power projects :-*

i) The State Commission shall determine two part tariff i.e. fixed and variable charges in respect of biomass based power projects instead of a single flat energy tariff. The fixed charges may be determined for the life cycle of biomass power projects. However ***the variable charges may be determined periodically on the basis of prevailing biomass fuel price which may be fixed after carrying out a State specific study****.* ***The fuel price may be determined annually through an independent study.*** *Attentively fuel price may be determined for the first year of the Control Period of say 2 to 3 years with percentage annual escalation linked to appropriate indices for the*

subsequent years of the Control Period. At the end of the Control Period, the fuel price may be re-determined for the first year of the next Control Period."

Further, contentions of intervener, SWIVPL has not been supported by any study done by the CERC in respect of biomass fuel cost. As per HPPC understanding, the CERC in past has only considered the fuel cost specified in the HERC Regulations without carrying out any its own analysis. The cost of biomass fuel specified in the HERC RE Regulations, 2021 has been evolved through detailed analysis of biomass fuel cost considered other States and Haryana and actual purchase cost of biomass by M/s Sainsons Paper Industries Pvt. Ltd. The cost of biomass fuel on the basis of weighted average cost of biomass and paddy straw mix in the ratio of 70:30 has been specified in the existing Regulations as Rs.3000/MT (Rs. 0.7x3400+0.3x2000) considering the actual cost of paddy straw as Rs. 2000/MT proposed by M/s Sainsons Paper Industries and average cost of other biomass fuel as Rs 3400/MT.

In view of aforementioned, it would be imprudent to consider the biomass fuel cost specified by the CERC.

Further, the variable cost has to be determined in terms of the Regulations in vogue, and reasoned order of the State Commission only be challenged in the appropriate court of law.

Issue No. 3

Fuel cost escalation factor i.e. 2.93% does not match with the inflation and rise in input cost in the country.

HPPC's reply to issue no. 3

Regarding fuel cost escalation factor i.e. 2.93%, it is submitted that the Hon'ble Commission has considered the same based on its past methodology and the Commission vide its order dated 27.04.2021 has given well reasoning for arriving at this value. Submissions of HPPC in reply to contentions M/s Hind Samachar and SAEL Ltd. may also be referred to in this context. The escalation factor has been specified by the Hon'ble Commission after due diligence and in order.

Thus, the intervener SWIVPL is wrong in stating that the escalation factor has been specified without considering the inflation and rise in input cost.

Issue no. 4

Changing the fuel mix by providing 30% weightage to paddy straw would force the plants to operate with fuel beyond what they have been designed for and non - availability of paddy straw in the vicinity of power generating plant.

HPPC's reply to issue no. 4

The generator has cited that changing the fuel mix by providing 30% weightage to paddy straw would be forcing the plants to operate with fuel beyond what they have been designed for. In this regard, reference is invited to the provisions of PPA which mandates that the plant of the generator has to be designed in such a way to use different types of non-fossil fuels. Clause 13.1 of the PPA dated 22.06.2012 executed with generator is reproduced as under:-

"***13.1*** *Fuel usage guidelines shall be as per HERC guidelines as amended from time to time. The current guidelines are elaborated as under:-*

i. The biomass power plant shall be designed in such a way that it uses different types of non-fossil fuels available within the vicinity of the biomass power project such as ***crop residues, agro industrial residues****, forest residues etc. and other biomass fuels as may be approved by MNRE.*

Xxxx"

It is evident from the above that the obligation to design and generating plant set up plant capable of using different types of non-fossil fuels such as crop residues, agro industrial residues, forest residues etc. and other biomass fuels as may be approved by MNRE lies with the SWIVPL. **Thus, the contention that it using of paddy straw as fuel is beyond what they have been designed for is misconceived and wrong.**

It is pertinent to mention that at Sr no. 32, the generating is otherwise admitted that the paddy straw has been used as fuel over the years for the plant. Thus the SWIVPL is approbating and reprobating on the issue.

Regarding GCV of paddy straw, submissions of HPPC in reply to contentions M/s Hind Samachar and SAEL Ltd. may also be referred to. MNRE has recommended GCV of 3300kCal/kg for straw/stalks. **The contention of SWIVPL on lower GCV of paddy straw is thus devoid of merit.**

Regarding, availability of paddy straw in the vicinity, the SWIPL has not submitted any document to substantiate its claims/statement and as such not worthy of any consideration.

Issue no. 5

The HERC RE Regulations, 2017 is applicable only on RE Project newly set up with entirely new plant and machinery during the control period FY 2017-18 to FY 2020-21 in respect of tariff determination.

HPPC's reply to issue no. 5

The contention of SWIVPL is not a subject matter of instant Petition. Regarding applicability of fuel cost specified in the HERC RE Regulations, 2017, HPPC has filed an appeal in the APTEL (**DFR-132 of 2021**) and the matter is under adjudication. The contentions are thus a feeble attempt to create prejudice in the matter. All submissions are made in the alternative and without prejudice to each other. Nothing submitted herein shall be deemed to be admitted unless the same has been admitted thereto specifically.

Issue no. 6

Consideration of SHR for determination of variable cost. SWIVPL has contended that the SHR specified in the HERC RE Regulations, 2021 is in variance with the SHR considered for plant in terms of HERC RE Regulations, 2010. It has been contended that SHR cannot be changed for plants which have already been commissioned as huge amount of capital cost would have to be incurred to change the SHR.

HPPC's reply to issue no. 6

It is a fact that SHR is a plant specific parameter. SWIVPL has not submitted any detail of its plant SHR and only contemplating to the SHR of 4125 kcal/kWh specified in HERC RE Regulations qua SHR of 4200 kCal/kWh specified in the HERC RE Regulations, 2010.

It may be noted that the project of SWIPL was envisaged during the year 2011-12 and PPA was signed on 22.06.2012. The then HERC RE Regulations, 2010 specified SHR of 3800 kCal/kWh for the projects similar to SWIVPL. The SHR was later revised to 4200 vide 4th amendment to the HERC RE Regulations, 2010 notified on 12.08.2015. The plant of SWIVPL was commissioned before the enactment of 4th amendment to the HERC RE Regulations, 2010.

Thus, it is understood that the actual SHR of plant would still be better than 4125 kCal/kWh. It is not appropriate on part of SWIVPL to seek determination of variable cost considering SHR of 4200 kCal/kWh without citing actual value of SHR. **The Hon'ble Commission may consider better of actual SHR and generic SHR for determination of variable cost for the plant of SWIVPL.**

4. M/s Oasis Commercial Pvt Ltd (Oasis)

Issue No.1

While estimating, calculating, adding and finalizing the various parameters involved in the determination of fuel cost as well as fuel handling charges, many important factors and costs have been excluded and miscalculated.

Using 70:30 fuel mix, not only the net cost of production per unit generation of electricity increases but also increases the fuel handling charges associated with usage, blending, feeding, storing, burning of the said 70:30 fuel.

Reply to Issue No.1

At the outset it is submitted that the contentions of intervener, Oasis is without any supporting document and not worthy of consideration. Paddy straw is no different than general biomass in terms of Handling and GCV. Furthermore, the fuel handling charges are part of O&M expenses. Regarding 70:30 mix, comments already made in the latter part of these submissions may be considered.

5. Naraingarh Sugar Mills Ltd (NSML)

Issue No. 1

NSML has stated that the average total cost of bagasse works out to be around Rs. 3280/MT. Considering the same, the fuel cost per unit for export during crushing season comes out to be Rs. 5.83 per unit.

Reply to Issue No. 1

In this regard, it is submitted that the Commission in its order dated 03.09.2012 in HERC/PRO-10 of 2012 inter alia considered the contention of the project developers asking for consideration of the market rate of bagasse i.e. Rs. 1500 per MT for determination of tariff and rejected the same. In the said order, the Commission had determined the bagasse cost at Rs. 662 per MT only for FY 2012-13. The relevant extract of the order is reproduced below:

"The Commission has considered the above submission on cost of bagasse and is of the view that for all practical purposes bagasse is a by-product incidental to the business of sugar manufacturing. Hence in the process of cane crushing, a part of the cane residues after extraction of cane juice which is further clarified and crystallised into sugar i.e. bagasse (the other being molasses) is utilised for firing the boilers and

the remaining is the waste product which could be sold to users in the paper industry or utilised as fodder etc. However, the same can also be used for co-generation of power. Therefore, in effect, bagasse is available to the sugar mills free of cost and hence attributing opportunity cost in terms of market rate realised in case the same is sold to a third party may not be appropriate and would unjustifiably load the electricity so generated with fictitious cost. Hence the Commission does not agree with the intervener that the rate realised on sale of bagasse to a third party as reported by them needs considered for determining tariff for such incidental generation of power."

On 20.11.2013, the Commission passed an order in *PRO – 15 of 2013* wherein the State Commission notified the generic tariff for bagasse-based projects to be commissioned during the FY 2013-14 and the levelized tariff for the projects commissioned was determined at Rs. 4.15 per unit whereas the tariff for FY 2013-14 was determined at Rs. 4.05 per unit. In the said order, the private sugar mills/biomass developers pitched for pegging the cost of bagasse at Rs. 1859 per MT for FY 2012-13 and for FY 2013-14 as determined by the CERC. However, the Commission had considered the bagasse cost at Rs. 695 per MT for 2013-14. The relevant extract of the order is reproduced below:

"*10.3 Fuel Cost (Biomass & Baggase):*

Star Wire had submitted that a realistic level of biomass fuel price would be Rs. 3400/MT as being paid by them which ought to be considered by the Commission while determining generic tariff for biomass based power projects in Haryana and the same needs to be escalated by 10% per annum. While Saraswati Sugar Mills Ltd. Had proposed that this Commission, for bagasse should consider CERC determined price of Rs. 1859 per MT for FY 2012-13 and for FY 2013-14 the same should be escalated at the rate of 10%.

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xxxx

As far as cost of bagasse is concerned no data was submitted by the nodal agency i.e. HAREDA. The Commission reiterates that bagasse is available on site for co – generation. Hence no additional expenses are incurred in collection, storing, handling etc. The Commission had considered Rs. 662 / MT as cost of bagasse for FY 2012-13. Hence after considering an escalation factor of 5% as per regulation 52 of RE

regulations, 2010, the bagasse cost for FY 2013-14 has been pegged at Rs. 695 / MT for the purpose of tariff determination for the projects to be commissioned in FY 2013-14."

From the above it is clear that the Commission was always of a considered view that the bagasse is a by-product of sugar mills which is available on site for co-generation and therefore, no additional expenses are incurred in collection, storing, handling etc. Accordingly, the Commission in past had considered the market prices of bagasse and considered rates which are almost one third of the market prices.

Considering the cost of bagasse as Rs. 695/- per MT, in year 2013-14 in line with previous reasoned orders of the Hon'ble Commission, the cost of bagasse for the FY 2021-22 works out to be Rs. 1027/- per MT considering an escalation of 5%. The Commission may consider the cost of bagasse as Rs. 1027/- per MT in light of above mentioned details and philosophy adopted by the Commission in the past.

It is pertinent to mention here that the fuel cost considered by the Uttar Pradesh Electricity Regulatory Commission's Regulations, 2019 dated 25.07.2019 is Rs. 1010/MT (for FY 2019-20) with the escalation of 5%. As per Regulations the variable cost considered for the FY 2019-20 to FY 2023-24 for bagasse based existing projects commissioned during FY 2005-06 to FY 2008-09 is placed as under:-

Financial Year	Variable cost per unit
2019-20	1.77
2020-21	1.85
2021-22	1.95
2022-23	2.04
2023-24	2.15

Whereas the variable cost considered for the FY 2019-20 to FY 2023-24 for bagasse based existing projects commissioned during the FY 2009-10 to FY 2013-14 is as under:-

Financial Year	Variable cost per unit
2019-20	1.67
2020-21	1.75
2021-22	1.84
2022-23	1.93
2023-24	2.03

The Hon'ble Commission may consider the fuel cost of bagasse as Rs. 1027/MT in light of the aforementioned details.

Issue No. 2

High cost of paddy straw and associated cost compared to proposed by the Commission.

Additional cost for boiler modification for using paddy straw as fuel.

Reply to Issue No. 2

The contentions of NSML is devoid of merit in the light of submissions made in the latter part and reply submitted by M/s Sainsons Paper Industries Pvt. Ltd. regarding cost of paddy straw.

The issue of additional cost for boiler modification stands adjudicated by HERC vide order dated 06.11.2020 passed in case and thus no longer res integra.

The Commission also granted HPPC an opportunity of hearing on 27.01.2022. The generators present during the final hearing held on 27.01.2022 pleaded that they may be provided a copy of the reply filed by HPPC, so that they may submit their rejoinder on the same. Acceding to the request of the generators, the Commission directed HPPC to submit a copy of its reply filed in the Commission, to the generators, to enable them to file their response on the same.

The Commission has considered the views/comments/suggestions of the stakeholders and has classified the same under three broad categories viz.

i) Comments on SHR, GCV, escalation factor and fuel mix of biomass and paddy (70:30)
ii) Fuel cost (Rs./MT)
iii) Other issues – Legal and Regulatory.

The Commission observes that the comments were invited on the fuel cost (Rs./MT) only, as mentioned in the draft order. Accordingly, the comments on issues mentioned in i) above, for which no changes were proposed in the draft paper and are to be considered in accordance with the norms specified in the HERC RE Regulations, 2021, hence not relevant for the present suo-motu petition. Therefore, the Commission

has considered the comments on fuel cost (Rs./MT) only. Further, certain legal and regulatory issues raised by the stakeholders have also been dealt in the order.

In respect of fuel cost (Rs./MT), the reply filed by the generators, HPPC and rejoinder of the generators as well as Commissions' view thereon, have been discussed here under:-

i) Comments filed by M/s. Naraingarh Sugar Mills Ltd (NSML)

NSML has submitted that the average total cost of bagasse works out to be around Rs. 3280/MT and average cost of paddy straw works out to be Rs. 3100/MT (all inclusive i.e. collection cost, storing at centers, loss in storage, transportation and unloading cost, chipping cost, loss during processing etc.) taking into consideration of the fact that collecting huge quantum of paddy straw per year (in respect of its 25 MW power plant) is impossible to source from only vicinity. NSML has further submitted that average biomass cost excluding paddy straw is around Rs. 3445/MT.

ii) Comments filed by M/s. Sainsons Paper Industries Ltd.

Sainsons Paper Industries Ltd., which is a 5MW biomass based project in Pehowa, has submitted that actual average cost of paddy straw was in the range of Rs 1650/MT to Rs. 1750/MT, in the FY 2020-21 and Rs. 1900/MT in the FY 2021-22.

iii) Comments filed by M/s. Starwire (INDIA) Vidyut Pvt Ltd. (SWIVPL)

SWIPL, which 9.9 MW biomass based project in Mahendergarh has submitted that report of study conducted by MDU, Rohtak should have been made available in public domain giving an opportunity to the stakeholders to make any submission on the report.

SWIPL has further submitted that the biomass fuel cost of Rs. 3400/MT proposed by the Commission, is unrealistic. Ld. CERC has published biomass fuel cost for the State of Haryana which is at Rs. 3975 per MT for the FY 2021-22 and thereafter an escalation of 5% is applicable for the subsequent years, which may be adopted by the Commission.

iv) Comments filed by M/s. Hind Samachar Ltd. and SAEL Ltd.

M/s. Hind Samachar Ltd. and SAEL Ltd, having paddy straw based power projects of 15 MW capacity each, in Pehwa and Kaithal, respectively, have submitted that this Commission had approved a normative fuel cost of Rs.

3605.61/MT for FY 2019-20 in line with the Ld. CERC with an annual escalation of 5% i.e. Rs. 3785.89/MT for FY 2020-21 considering the permitted rate of escalation, which is liable to be adopted in the draft Order.

v) Comments filed by M/s Oasis Commercial Pvt Ltd (Oasis)

M/s Oasis has submitted that while estimating, calculating, adding and finalizing the various parameters involved in the determination of fuel cost as well as fuel handling charges, may important factors and costs have been excluded and miscalculated.

vi) Comments filed by M/s. Gemco Energy Ltd.

M/s. Gemco, having 8 MW biomass based power plant in Bhiwani, has neither filed any comments in pursuant to the public notice of the Commission nor participated in the proceedings of the case. However, the comments were filed on 02.02.2021, pursuant to interim order of the Commission dated 27.01.2022, which was applicable to the generators participated in that hearing.

The submissions of M/s. Gemco, concerning the fuel cost (Rs./MT), are as under:-

The MDU Report has assumed the cost of paddy straw as Rs.3113.14 /MT with the assumption of fuel being supplied in square bales and within 25 kms of the project location. These riders have not been incorporated while arriving at the average cost of paddy straw.

Even the assumption of biomass fuel rate as Rs. 3400/MT is not based on any exhaustive study but a mere assumption by the Commission. It needs to be appreciated that the fuel cost determined by the CERC in its generic tariff order dated 19.03.2019 for 2019-20 is 3605.61 (Rs/MT).

vii) Comments filed by HPPC

HPPC has submitted that report of MDU Rohtak, cannot be relied upon, for determining the fuel cost for renewable projects in its draft Suo Moto order. The authenticity of the facts and figures present in the said report are unknown. Moreover, the report has not been shared in public domain.

Accordingly, HPPC has submitted that cost of paddy straw may be kept in the rate of 1650/MT to 1900/MT, as provided in the HERC RE Regulations, 2021,

based on the actual average fuel cost submitted by M/s Sainsons Paper Industries along with actual bills.

HPPC has further submitted that the cost of bagasse may be considered as Rs. 1027/- per MT, as provided in the HERC RE Regulations, 2021.

Commission's view on the fuel cost (Rs./MT)

The Commission has perused the submissions of the interveners in the matter. At the onset it is observed that the limited purpose of the draft paper / order issued by this Commission was to realign delivered cost of paddy stubble and bagasse as well as cost of biomass (to the limited extent of its correlation with the price of paddy stubble) used for power generation in Haryana. As a corollary, at this stage, the Commission is not going into the merits of issues raised vis-à-vis calorific value of fuel, station heat rate, fuel mix etc.

The interveners have raised a preliminary issue regarding not making available the research study got conducted by the Maharshi Dayanand University (MDU), Rohtak, a NAAC Accredited A+ Grade University, the findings of which has been relied upon by the Commission.

The Commission has considered the above objections and observes as under. The research / study commissioned by this Commission for its assistance, was not a technical research. The report prepared by the MDU and submitted in october, 2021 was based on first establishment of the entire value chain of paddy stubble procured by the power generators i.e. cutting, raking, baling, loading, transportation and un-loading, storage etc. within a catchment area of 25 KMs. The major stakeholders in the value chain i.e. farmers, aggregators, power generators / end – user were consulted. The findings of the study was therefore based on descriptive, exploratory, empirical and analytical research design. The primary data was collected from 12 districts in Haryana that are actively involved in the paddy cultivation viz. Ambala, Fatehabad, Hisar, Jind, Kaithal, Karnal, Kurukshetra , Panipat, Sirsa, Sonepat, Yamunanagar and Jhajjar. Further, the major aggregators / balers and power generators including bagasse-based co-generators were also contacted for the purpose of collecting

primary data. Accordingly, the random sample size comprised of 9 aggregators and 2143 farmers. Given, the uniformity in the activity as against diverse practices from farm to generator's site, the sample size, dispersed over 12 districts, has been considered as significant for the purpose of generalization of the findings.

The Commission observes that HPPC has relied on the evidence, in support of fuel cost (parali), provided by M/s Sainson Paper Industries Ltd. which has a 5 MW power generation facility as well. The Commission, at the onset, observes that the grievance of other biomass based power generators could not be ignored on the basis of fuel cost of paddy straw submitted by M/s. Sainsons Paper Industries Ltd., since some of the invoices were unsigned with missing data / details. There was mismatch in the quantity mentioned in the invoices and total value of invoices. M/s Sainsons was not present in any of the hearings held in the matter to substantiate its claim of lower fuel cost.Hence, no reliance could be placed on the same. Further, HPPC has wrongly averred that the fuel cost determined by this Commission has been adopted as such by the Hon'ble Central Commission. In fact, this Commission, earlier, had adopted fuel cost as determined by the CERC for Haryana.

On the other hand, the fuel cost claims of other interveners are either based on fuel cost allowed by the CERC or the cost claimed by them based on the invoices provided thereto.

Needless to say, that the fuel cost proposed by HPPC along with M/s Sainson Paper Industries Ltd. is on the one extreme while the same claimed by the IPPs are on the other extreme. Hence, the Commission, is of the considered view that MDU report, based on empirical evidence, strikes a just balance between the two extremes. Further, as the Commission has got conducted study specifically for Haryana, it would be appropriate to go by the findings of an independent institution of repute.

Additional comments of HPPC and Commission's decision thereon.

HPPC's Comments

That the generic tariff for the RE project under the HERC RE Regulations, 2021 has to be determined within the four corners of ibid Regulations only. Determination of generic/normative variable cost considering the fuel cost proposed in a report has no effect and cannot be considered unless the Regulations are amended to that effect.

That the fuel cost component as per the fuel cost specified in the HERC RE Regulations, 2021 for respective technologies of biomass/bagasse/ biogas for the FY 2021-22 and FY 2022-23 has been worked out as under:-

Nature of Project	**Fuel Cost for FY 2021-22 as per existing Regulations (Rs/MT)**	**Fuel Cost component/ variable cost (Rs/kWh)**	
		FY 2021-22	**FY 2022-23**
Biomass (Air Cooled – Travelling Grate Boiler) Single Fuel (Paddy)	2,186.26	3.37	3.46
Biomass (Air Cooled – AFBC Boiler) Single Fuel (Paddy)	2,186.26	3.31	3.40
Biomass (Water Cooled – Travelling Grate Boiler) Single Fuel (Paddy)	2,186.26	3.29	3.39
Biomass (Water Cooled – AFBC Boiler) Single Fuel (Paddy)	2,186.26	3.23	3.33
Biomass (Air Cooled – Travelling Grate Boiler) Mixed Fuel	3,000.00	4.54	4.67
Biomass (Air Cooled – AFBC Boiler) Mixed Fuel	3,000.00	4.47	4.60
Biomass (Water Cooled – Travelling Grate Boiler) Mixed Fuel	3,000.00	4.44	4.57
Biomass (Water Cooled – AFBC Boiler) Mixed Fuel	3,000.00	4.37	4.50
Bagasse based Co-generation	1,027.00	1.80	1.85
Non-bagasse based Co-generation	3,000.00	3.81	3.92
Biomass Gasifier	3,000.00	4.17	4.29
Biogas	685	2.34	2.40

That the above tariff is applicable to respective RE Project from the date of applicability of the HERC RE Regulations 2021 in terms of the Commission's order dated 27.04.2021.

Even if the revised fuel cost is considered by the Commission, the same will be applicable prospectively. For the period from 30.04.2021 i.e. from the applicability of HERC RE Regulations 2021 to date of such order/ amendment in Regulations, the fuel cost component applicable on the renewable projects set up/to set up in Haryana is required to be determined separately considering the fuel cost specified in the Regulations. Fuel cost component applicable thereafter, may be considered as specified in the amendment to the HERC RE Regulations for revised fuel cost.

That non-issuance of the revision of variable cost in terms of the HERC RE Regulations for respective projects, HPPC has to pay high variable cost claimed by generators considering variable cost corresponding to pre-revised fuel cost. The fuel cost in the control period for the RE Regulations, 2021 had to be lower with the advent of the Regulations. This has led to excess payment to the various biomass and bagasse generators to the tune of Rs. 18 crores during the period from april, 2021 to november 2021 (FY 2021-22). The Commission may, therefore revise the fuel cost by carrying out the amendment in the RE Regulations and permitting recovery of the excessive fuel cost paid up till now by setting up a defined procedure for the same.

Commission's views

The Commission has considered the above submission and is of the view the provision of annual review of fuel cost has been made, for the first time in the HERC RE Regulations 2021. However, the Commission is not inclined to give retrospect effect to the fuel cost revision. The FY 2021 is almost over. Hence, the revision in fuel cost as per the present order shall be applicable prospectively, i.e. w.e.f. 1.04.2022. Fuel cost (Rs./MT) for the FY 2021-22, has already been approved by the Commission in its order dated 27.04.2021 read with HERC RE Regulations, 2021, which shall be applicable for determination of fuel cost (Rs./kWh).

HPPC's Comments

The draft fuel cost order does not provide generic tariff of small projects (upto 2 MW) commissioned during the Control period of HERC RE Regulations 2021.

The Commission may consider specifying, the fixed cost for respective RE Project on levelized basis in terms of Regulation 9 of HERC RE Regulations 2021.

Commission's views

The Commission has considered the above submissions of the intervener. It is observed that in Haryana, there is no bagasse-based co-generation project, paddy stubble / biomass-based generation / co-generation projects in Haryana (except one micro biogas project of Mor Bio). Hence, restricting the fuel cost up to 2 MW would be an academic exercise serving no useful purpose. Hence, the fuel cost determined in the present order shall be applicable for all bagasse / biomass/ paddy stubble-based power projects in Haryana commissioned during the previous control period(s) as well as such projects to be commissioned in the FY 2021-22 and the FY 2022-23 under generic tariff order of the Commission. The ground realities of fuel cost may not change significantly with the project size in terms of Rs /kWh. Further, as recommended by MDU in its report, the Commission, is also of the view that paddy stubble is transported at an average distance up to 25 KMs.

Commission's Analysis and Decision

Cost of Bagasse (Rs./MT)

The Commission observes that M/s. NSML has proposed Rs. 3,280/MT as the cost of bagasse during crushing season, which includes the purchase cost of bagasse as Rs. 2,580/MT and the transportation cost in the vicinity of 75 kms works out to be around Rs.700/MT. 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 considered view that fuel prices should be considered for bagasse-based cogeneration plant for the purpose of tariff determination. Accordingly, the Commission in its order dated 27.04.2021 on RE Regulations, 2021, has decided as under:-

"Further, as far as bagasse, used as fuel in the co-generation power projects of Sugar Mill is concerned, the fact remains that bagasse is available in the

premises of the Sugar Mills and the capacity of the co-generation power plants ought to be designed considering the quantum of bagasse available depending on the cane crushing capacity (Tons Crushed Per Day) of the Sugar Mills. At times there could be some surplus bagasse available including in the absence of co-generation facility. In such an event bagasse may be sold off as a source of fiber for pulp production or other possible usage. In the present case the Commission is concerned with co-generation based on internally available bagasse in the premises of the Sugar Mills, hence some quantity sold in the market could be at a varying price which cannot form the basis of benchmarking the fuel cost in the present case. Resultantly, for arriving at the cost of bagasse for the FY 2021-22, the Commission has considered the base price at Rs. 695 / MT (FY 2013-14) and escalated the same by 5% per annum to arrive at Rs. 1027 / MT."

However, the Commission in its draft order for the FY 2021-22 & FY 2022-23, has increased the cost of bagasse from Rs. 1027/MT to Rs. 2000/MT, based on the report of MDU, Rohtak dated October, 2021. MDU, Rohtak, as observed as under:-

"…….Most of the bagasse generated in the sugarmills is consumed within the mills and not much bagasse is left after the end of the crushing season. Some quantity of bagasse is kept in reserve by the sugarmills for starting of next year's operations and trial runnings. However, excess of bagasse may be sold to outsiders at a rate prevailing in market for the quality of bagasse available; which was found to be Rs 2000 to 2300 per MT during the year 2020-21."

The report of MDU, Rohtak has strengthened the decision of the Commission in the order dated 27.04.2021 that bagasse is available in the premises of the Sugar Mills and there is no transportation cost involved. Although, 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 has accepted the cost of bagasse as Rs. 2000/MT, based on the recommendations of M/s. MDU, Rohtak.

The Commission observes that the submissions of M/s. NSML is not supported by any factual data. Accordingly, the Commission has therefore retained the cost of bagasse as Rs. 2000/MT, specified in the draft order which was based on empirical evidence collected by the MDU.

Cost of Paddy Straw(Rs./MT)

The Commission observes that the generators have sought cost of paddy straw to be determined at par with the fuel cost determined by the CERC with an annual escalation of 5% i.e. Rs. 3785.89/MT for FY 2020-21, as against the cost of paddy straw as Rs. 3113.14/MT, accepted by the Commission based on the report of MDU, Rohtak.

The Commission has also considered the submissions of NSML to the effect that the average cost of paddy straw, taking into consideration of the fact that collecting huge quantum of paddy straw per year (in respect of its 25 MW power plant) is impossible to source from only vicinity, is Rs. 3100/MT (all inclusive i.e. collection cost, storing at centers, loss in storage, transportation and unloading cost, chipping cost, loss during processing etc.)

M/s. Sainsons Paper Industries Ltd., has submitted that actual average cost of paddy straw was in the range of Rs 1650/MT to Rs. 1750/MT, in the FY 2020-21 and Rs. 1900/MT in the FY 2021-22. However, the invoices submitted by M/s. Sainson Paper Industries Ltd., could not substantiate its claim. Some of the invoices were unsigned with missing data / details. There was mismatch in the quantity mentioned in the invoices and total value of invoices. Therefore, the Commission considered it appropriate to discard the submissions of M/s. Sainsons and uphold the cost of paddy straw as Rs. 3113.14/MT, based on the report of MDU, Rohtak, which was based on the detailed survey of paddy grown area in the State of Haryana and based on the data collected from 2143 farmers, aggregators and power generators.

Cost of Biomass fuel (Rs./MT)

The Commission in its order dated 27.04.2021, has determined as under:-

"…ii) The Commission has considered the submissions of the intervener on the issue of cost of biomass fuel that the same shall be reckoned with as the weighted average cost of biomass mix and actual cost of Paddy Straw. Hence, in order to promote usage of paddy straw so as to prevent its burning in the field leading to environmental issues, the Commission has considered it appropriate to consider 70% generic cost of biomass mix and 30% of the cost allowed by the Commission for Paddy Straw. Accordingly, the cost of biomass & biomass gasifier fuel for the FY 2021-22 shall be Rs. 3,000/MT. (page 10 of the order dated 27.04.2021)."

Accordingly, the corresponding provision was inserted at Regulation 36 and 38 of HERC RE Regulations, 2021, notified on 30.04.2021. The relevant extract is reproduced as under:-

"36 Fuel Mix

……

(3) Use of Fossil Fuel shall not be permitted. However, at least 30% of the fuel requirement shall be met from Paddy Straw by all biomass/non- fossil-based cogeneration plants."

"38. Fuel Cost. – *Biomass fuel price during first year of the Control Period shall be Rs. 3000 /MT and shall be escalated at the rate of 2.93% per annum for arriving at the levelised tariff for the entire useful life of the project.*

The cost of biomass fuel (Rs. 3000/MT) was based on the submission of HPPC, reproduced in the order of the Commission dated 27.04.2021. The relevant extract is reproduced hereunder:-

"…… The generic cost of biomass accordingly merges to the tune of Rs. 3400 per MT whereas actual cost of paddy to the tune of Rs. 2000 per MT. Considering 70:30 mix of biomass and paddy as mandated in the draft discussion paper, the biomass fuel prices merges to Rs. 2980/MT (Rs. 0.7x3400+0.3x2000) only".

Thus, the cost of biomass fuel determined on the basis of weighted average cost of biomass and paddy straw mix in the ratio of 70:30,

considering the cost of biomass as Rs. 3,400/- and cost of paddy straw as Rs. 3113.14/MT, is determined at Rs. 3313.94/MT (Rs. 0.7x3400+0.3x3113.14).

Considering the fuel cost (Rs./MT) decided above and taking all other parameters as provided in the HERC RE Regulations, 2021, notified on 30.04.2021, the fuel cost (Rs./kWh) for various technologies of biomass/bagasse/biogas, for the FY 2021-22 and FY 2022-23, has been determined as under:-

FY 2021-22

Nature of Project	Fuel Cost (Rs. /MT)	Fuel Cost (Rs./kWh)
Biomass (Air Cooled - Travelling Grate Boiler) Single Fuel (Paddy)	2,186.26	3.37
Biomass (Air Cooled - AFBC Boiler) Single Fuel (Paddy)	2,186.26	3.31
Biomass (Water Cooled - Travelling Grate Boiler) Single Fuel (Paddy)	2,186.26	3.29
Biomass (Water Cooled - AFBC Boiler) Single Fuel (Paddy)	2,186.26	3.23
Biomass (Air Cooled - Travelling Grate Boiler) - Mixed Fuel	3,000.00	4.54
Biomass (Air Cooled - AFBC Boiler) Mixed Fuel	3,000.00	4.47
Biomass (Water Cooled - Travelling Grate Boiler) Mixed Fuel	3,000.00	4.44
Biomass (Water Cooled - AFBC Boiler) Mixed Fuel	3,000.00	4.37
Bagasse based Co-generation	1027.00	1.80
Non-Bagasse based Co-generation	3,000.00	3.81
Biomass Gasifier	3,000.00	4.17
Biogas	685.00	2.34

FY 2022-23

Nature of Project	Fuel Cost (Rs. /MT)	Fuel Cost (Rs./kWh)
Biomass (Air Cooled - Travelling Grate Boiler) Single Fuel (Paddy)	3,113.14	4.79
Biomass (Air Cooled - AFBC Boiler) Single Fuel (Paddy)	3,113.14	4.71
Biomass (Water Cooled - Travelling Grate Boiler) Single Fuel (Paddy)	3,113.14	4.69
Biomass (Water Cooled - AFBC Boiler) Single Fuel (Paddy)	3,113.14	4.60
Biomass (Air Cooled - Travelling Grate Boiler) - Mixed Fuel	3,313.94	5.01
Biomass (Air Cooled - AFBC Boiler) Mixed Fuel	3,313.94	4.94
Biomass (Water Cooled - Travelling Grate Boiler) Mixed Fuel	3,313.94	4.90
Biomass (Water Cooled - AFBC Boiler) Mixed Fuel	3,313.94	4.83
Bagasse based Co-generation	2,000.00	3.50
Non-Bagasse based Co-generation	3,313.94	4.21
Biomass Gasifier	3,313.94	4.60
Biogas	685.00	2.34

The HPPC / Discoms, may accordingly revise the fuel component (Rs / kWh) of the tariff, for the eligible RE Generator.

The ibid fuel cost determined by the Commission shall be prospectively applicable for the RE Projects in Haryana commissioned during the previous control period(s) as well as such projects to be commissioned in the FY 2021-22 and the FY 2022-23 under generic tariff order of the Commission. Provided there exists a valid PPA specifically approved by this Commission between the generator / seller and the buyer / HPPC / Distribution Licensees i.e. UHBVN / DHBVN.

It is added that the fuel cost determined herein shall continue to be in force till such time the Commission amends or re-determines the same. In such cases, say for the FY 2023-24, the fuel price escalation clause as provided in the RE Regulations in vogue shall prevail, subject to the adjustments vis-à-vis those determined by the Commission.

This order is signed, dated and issued by the Haryana Electricity Regulatory Commission on 21.03.2022.

Date: 21.03.2022
Place: Panchkula

(Naresh Sardana)
Member

(R.K. Pachnanda)
Chairman