BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS No. 33-36, SECTOR-4, PANCHKULA- 134112, HARYANA

Case No. HERC/PRO – 28 of 2020

Date of Hearing	:	01.10.2020
Date of Order	:	26.10.2020

IN THE MATTER OF:

Petition under section 62 of the Electricity Act, 2003 and Regulation 7 of the Haryana Electricity Regulatory Commission (Terms and conditions for determination of tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2017 for determination of tariff for 100% paddy straw based bio-mass power plant to be set up in the State of Haryana.

Petitioner
M/s. Sukhbir Agro Energy Ltd.

Respondents
1. State of Haryana, through Addl. Chief Secretary (Power), Haryana
2. Haryana Power Purchase Centre (HPPC), Panchkula
3. Haryana Renewable Energy Development Agency (HAREDA)

Present

On behalf of the Petitioners through Video Conferencing
1. Shri Praveen K. Sharma, Advocate for the Petitioners
2. Shri Satinder Pal Singh

On behalf of the Respondents through Video Conferencing
1. Smt. Sonia Madan, Advocate for HPPC
2. Shri Aditya Grover, Advocate for HAREDA

Quorum

Shri Pravindra Singh Chauhan, Member
Shri Naresh Sardana, Member

ORDER

Brief Background of the case

1. M/s. Sukhbir Agro Energy Ltd. has filed the present petition for determination of tariff for 100% Paddy Straw based Biomass Power Plant for generation of 15 MW in

village Kangthali & Sivan, Distt. Kaithal, Haryana, under Section 62 of the Electricity Act, 2003.

2. The petitioner has submitted is as under:-

a) That the petition is being filed under Clause 1.6.1 of the Request for Proposal read with Regulation 7 of the Haryana Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff From Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2017.

b) That the Petitioner is the flagship Company of Awla Group incorporated on 21.12.1999 as a Private Limited Company and reconstituted on 30.06.2006 as a Limited Company. The registered office of the Petitioner is situated at Faridkot Road, Guruharsahai, Dist. Ferozepur, Punjab, Pin-152022 and the corporate office of the Petitioner is located at A-4, 2nd Floor, Main Aurobindo Marg, Green Park, New Delhi-110016.

c) That Respondent No. 3 (HAREDA) floated the 'Request for Proposal' (RFP) for setting up of Paddy Straw Biomass based Power projects on Build, Own and Operate (BOO) basis in the State of Haryana with the approval of Government of Haryana and this Commission on 3rd August, 2017. The tariff after discount will be fixed for the term of the PPA. The projects were proposed to be set up in Ambala, Karnal, Kurukshetra, Jind, Kaithal and Fatehabad District on pilot basis with an aggregate capacity of about 50 MW. The RFP envisaged that an area of 668.97 thousand hectare under paddy cultivation would produce about 3482000 tons of paddy straw which has a potential to generate 408 MW of Power in the State. No fuel other than the paddy straw was to be allowed to be used in these projects. The projects were to be set up as per proven latest Rankine Cycle (Turbine + Boiler) technology having air-cooled condensers. The bidders were asked to offer discount on the CERC tariff of Rs. 8.0 per unit for FY 2017-18. The selection of the bidders for procurement of power from the projects under this bidding process will be on the basis of discount offered on the tariff approved/notified for the same by HERC. The clause in RFP regarding tariff provided as under:-

"1.6 Tariff:

1.6.1 As per the HERC RE Regulations, the ceiling tariff applicable shall be the tariff notified by the Hon'ble Commission for the year in which the project is commissioned on year to year basis, for the entire life of the project. The tariff for sale of power from such projects under this bidding process will be on the basis of discount offered on the yearly applicable ceiling tariff approved/notified for the same by the HERC in the year of their commissioning. The bidders should make suitable assumptions and estimations to arrive at such a projected tariff on their own *depending on the projected year of commissioning of their project. The discount should be given in Indian Rupees only."*

d) That HAREDA issued the Letter of Intent (LOI) on 16.02.18 to Hind Samachar Ltd and intimated that:-

"The recommendations of the Standing Technical Committee (STC) and the Technical Appraisal Committee (TAC) meeting were placed before the High Powered Committee (HPC) headed by the Chief Secretary, Haryana in accordance with Clause No. 20.4 of the State RE Policy 2005 in its meeting held on 11.01.2018. In the meeting of HPC, following decisions were taken for allotment.

For district Kaithal, project of 15 MW be allocated to M/s Sukhbir Agro Energy Ltd. at a discount of Rs. 0.71 per unit."

e) That Petitioner and HAREDA signed an MOU for setting up 100% Paddy Straw based Power Plant for 15 MW on 09.04.2018.

f) That the petitioner signed PPA on 22.02.2019 with the Respondent No. 2.

g) That Respondent No. 3 (HAREDA) requested the Respondent No. 2 (HPPC) to file a petition before this Commission for approval of draft Power Purchase Agreement (PPA). This Commission suggested certain changes in the draft PPA and approved the same vide Order dated 03.01.2019 (Case No. HERC/PRO-45 of 2018) and the PPA was executed by the HPPC and Project Developers including the Petitioner on 22.02.2019.

h) That the HERC while according approval to the draft PPA, vide its order dated 03.01.2019 stated that the Commission had approved the draft RFP documents for inviting bids for paddy straw-based power projects with the bench mark tariff being the generic tariff determined by the CERC/HERC vide its letter dated 20.07.2017. Bidders were not allowed to use any other fuel.

i) That the Commission vide the aforesaid Order approved the sources from which the power shall be procured by the HPPC through Power Purchase Agreement approved by the Commission. Further, this Commission held that tariff shall be decided by a separate petition filed by the generators under Section 62 of the Electricity Act, 2003 wherein ceiling tariff shall be the generic tariff of HERC for the FY 2017-18 with appropriate factoring of the discount negotiated with the bidders.

j) That this Commission also suggested some changes/aberrations in the draft PPA which are as under:-

"Para 11(a) The definition of the tariff needs to be changed to read that the tariff payable to the IPP shall be the tariff determined by the Commission with reference to

COD of the project and all the discounts offered by the IPP's as part of the RFP shall be deducted from the year to year tariff determined by the Commission."

k) That against the aforesaid Order dated 03.01.2019, certain parties namely M/s Jind Bio-energy LLP and M/s Fatehabad Bio-energy LLP filed a Petition no. HERC/PRO-10 of 2019 for clarification of the Order dated 03.01.2019 and M/s Hind Samachar Ltd was made one of the Respondents.

l) That Commission in para 12 of the Order dated 04.04.2019, while disposing off the petition no. HERC/PRO-10 of 2019, directed that:-

"However, before parting with the instant petition, the Commission decides that the issue may be revisited at the time of determination of year to year tariff by the Commission on the Petitions to be filed by the Project Developers in this regard."

m) That HPPC filed a Petition no. HERC/PRO-34 of 2019 seeking clarification of Order dated 04.04.2019 passed by the Commission.

n) That M/s Jind Bio-energy LLP and M/s Fatehabad Bio-energy LLP again filed a Petition no. HERC/PRO-31 of 2019 seeking direction against HPPC to execute fresh PPA with the project developers in the light of the directions contained in Order dated 03.01.2019 passed by this Commission.

o) That simultaneously M/s Jind Bio-energy LLP and M/s Fatehabad Bio-energy LLP also filed an appeal against the findings of this Commission in its orders dated 03.01.2019 and 04.04.2019 before Appellate Tribunal for Electricity (APTEL) and also prayed for execution of fresh PPA. The Petitioner herein was again dragged here as performa Respondent by M/s Jind Bio-energy LLP and M/s Fatehabad Bio-energy LLP in the appeal. Though the Petitioner Company was never a party challenging these Orders.

p) That vide order dated 15.07.2019 this Commission disposed of the Petition No. HERC/PRO-31 of 2019 with the following observations in the concluding paras:

"The Commission observes that it was not open for the HPPC to deviate from the definition of the word "Tariff" from the definition approved by the Commission in its Order dated 03.01.2019. The reference of the ceiling tariff in the ibid Order of the Commission dated 03.01.2019 is for the Commission to consider while determining year to year tariff on the petition to be filed by the Petitioners for determination of tariff. The same does not form part of the term of PPA. The terms of the PPA has to be necessarily as per the approval of the same granted by the Commission.

Accordingly, the Commission directs the Petitioners and Respondents to modify the PPA signed on 22.02.2019 and submit a copy of the same to the Commission within 15 days from the date of this Order."

q) That the petitioners have filed the present tariff petition under the applicable Regulations and the Request for Proposal.

r) There is no impediment in determination of tariff sought in the present petition keeping in view the commissioning of the project which is scheduled for January, 2021.

s) That it is submitted that the project of the Petitioner is getting unnecessarily delayed by the on-going litigations between HPPC and certain other parties. The Petitioner herein has already obtained all the statutory clearances required to implement the project. The readiness of the petitioner can be seen from the following table:

i) **Land**- The Petitioner has acquired 23 Acres of land in Vill. –Siwan & Kangthali, Distt-Kaithal

ii) **Civil and Structural Work**:

Sl No	Activity	Status
1	Construction of Boundary wall having total 1890 running meter dimension	100% completed
2	Levelling and Foundation work of Boiler Area	Levelling -100% completed. Foundation -100% completed. Column - 100% completed
3	Levelling and Foundation work at Turbine Area.	Levelling -70% completed. Foundation -100% completed. Column work -100% completed upto the plinth level.
4	Foundation work of Weigh Bridge	100% completed
5	Civil work of air-cooled condenser	Levelling – 40% completed. Foundation -100% completed. Column work-100% completed upto the plinth level
6	Civil work of Chimney	• Levelling -80% completed. • Foundation -100% completed. • Column and Brick work-. • Slab work under progress
7	Construction of Admin Block (40m*10m single storey RCC building structure)	• Foundation -100% completed. • Column and Brick work-100% completed. • Slab work 100% completed • Plaster inner outer 100% completed • Electrical work 60% completed.

iii) The Petitioner has already placed the following orders for the project:

SN	NAME OF THE ITEM	NAME OF THE SUPPLIER	ORDER DATE	PLANT	ESTIMATED ORDERED VALUE (Rs. In Lacs)	STATUS OF DELIVERY
1.	Boiler Erection & Supply	M/s ISGEC Heavy Engineering Ltd.	26.03.2019	Kaithal	4950.00	Material Delivery Already Started
2.	Turbine	Siemens Ltd.	31.05.2019	Kaithal	1095.00	Material Delivery Already Started
3.	ACC Supply & Erection	Kelvion India Pvt. Ltd.	29.08.2019	Kaithal	855.00	Material Delivery Already Started
4.	Cooling Tower Supply & erection	Mihir Engineers Pvt. Ltd.	04.09.2019	Kaithal	13.60	Material Delivery Already Started
5.	EOT Crane Supply & Erection	Technocraft Cranes Pvt. Ltd.	03.09.2019	Kaithal	39.97	Material Delivery Already Started

iv) **Statutory Clearances**: The Company has obtained all the statutory clearances required to implement the project.

As on date, the Petitioner has already invested approximately Rs. 35 Cr for the project and has further committed Rs. 75 Cr for the equipments out of total estimated cost of Rs. 140 Cr and is set to commission the project in the FY 2020-21.

PARAMETERS FOR TARIFF DETERMINATION:

t) The Petitioner submits that the HERC has already issued orders dated 20.12.2019 in the petition no PRO-53 of 2019 (Suo Moto) in the matter of determination of generic levelized generation tariff for the FY 2019-20 & FY 2020-21 under Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017. The relevant extract of the aforesaid judgment with regard to determination of tariff for the paddy straw based projects with Air Cooled Condenser and travelling grate boiler is reproduced herein for ease of reference:-

State	Levellised Fixed Cost	Variable Cost (FY 19-20 & FY 20-21)	Applicable Fixed Tariff Rate (FY 19-20 & FY 20-21)
	(Rs./kWh)	(Rs./kWh)	(Rs./kWh)
Levelised Tariff	3.06	7.77	10.83
Biomass power projects [single fuel Paddy Straw based project] with Air Cooled Condenser and travelling grate boiler			

u) That the Commission has approved capital cost @ of Rs 6.52 crores per MW, however, the Petitioner has worked out the capital cost @ Rs. 9.35 crores per MW. The Petitioner submits that in so far as project cost is concerned, the variations are due to the fact that the Petitioner is procuring latest state of the art technology (patented by BWSC Denmark), for setting up the 100% Paddy Straw Biomass Power Plant technology which is being set up for the first time in India. Due to its high cost including the cost of technology transfer etc, the purchasing cost of Boiler has gone up by more than double the normal cost of boiler of the same capacity from any Indian Boiler manufacturer. The plant being proposed is to be based on air-cooled condenser due to which the cost of boiler and turbine has further gone up in comparison to the water-cooled plants being put up at other places.

v) That due to the condition of usage of 100% rice straw and deployment of proven technology to ensure 80% PLF successfully, the Company has appointed M/s Desein Pvt. Limited (having vast experience and standing in providing consultancy for such projects) as technical consultant for providing detailed engineering design, selection of equipment, and will be coordinating for timely completion of the power plant.

w) That as there was continuous pressure from the Government to put up the project at the earliest, therefore, the Petitioner made huge investments in this project in anticipation that the tariff issue will be resolved soon and now the implementation of the project has reached its advance stage.

x) That the following prayers have been made:-

The Commission may determine tariff for the project of the petitioner for generation of electricity by 100% paddy straw based Biomass Power Plant. Any other relief which this Commission may deem just and proper in the facts and circumstances of the present case be allowed in favour of the Petitioner

Proceedings in the Case

3. The case was first heard on 11.08.2020. The Commission vide its Interim Order dated 11.08.2020 directed the Petitioner to provide certain additional information with copy to the Respondent. The case was next heard on 08.09.2020, wherein the Petitioner submitted that the detailed information sought by the Commission has been submitted. Upon hearing the parties, the Commission observed that biomass based power projects using paddy straw as fuel should be promoted and the necessary approvals sought by them including determination of tariff should be put on fast track. Accordingly, the case was next heard on 15.09.2020 and finally on 01.10.2020, wherein the Commission heard the arguments of all the parties at length and directed the Petitioners to file written submissions within one week. HPPC was also directed to file written submissions, if any.

4. In response to the Interim Orders of the Commission, the Petitioner filed a its reply dated 07.09.2020, submitting as under:-

i) Details of capital cost along with bills/works order and documentary evidence of their payment, including the followings:-

a) Project cost appraised by the lenders/submitted to lenders.

Reply: Sanction letter of term loan for Rs. 50.00 Crore, dated 17.08.2019, from UCO Bank is submitted.

b) Land cost/lease cost.

Reply:

A	Land & Land Development	Vendor	PO No	PO Date	PO Value	Payments Till Date	Invoices raised	Remark
1	Land & Land Development				1014	984.01	984.01	Land Registry

c) Estimated project cost (EPC), both offshore CIF and landed CIF and estimated associated cost to be incurred upto the date of commissioning.

Reply:

B	Plant & Machinery	Vendor	PO No	PO Date	PO Value	Payments Till Date	Invoices raised	Remark
1	75 TPH Boiler - Supply	ISGEC Heavy Engineering Ltd	SAEL/KTL-001A/18-19	26-03-2019	4,777.50	1887.29	2170.00	Annx-1
2	75 TPH Boiler - Errection & Commission	ISGEC Covema Ltd	SAEL/KTL-001C/19-20	10-09-2019	472.00	85.84	78.88	Annx-2
3	15 MW Steam Turbine Generator	Siemens Ltd	SAEL/KTL-004/19-20	31-05-2019	1,208.75	340.43	375.63	Annx-3
4 5	Compressed Air Plant Air Receiver Dehumidifier and Pipe line etc	Proair Engineers	SAEL/KTL-024/19-20	13-12-2019	53.92	7.70		Annx-4
6	25/5 T Capacity double gaddar EOT Crane with DSL arrangement & rail	Technocraft Cranes Pvt Ltd	SAEL/KTL-015/19-20	03-09-2019	42.32	35.51	39.24	Annx-5
7	Air Cooled Condenser	Kelvion India Pvt Ltd	SAEL/KTL-014/19-20	29-08-2019	903.73	119.25		Annx-6
8	33 KV Switchyard, 11 KV VCB Panel Switchboard, 22.5 MVA Power Transformer & 2.5 MVA Distribution Transformer	Hartek Power Pvt Ltd	SAEL/KTL-026/19-20	04-02-2020	337.66	173.96	196.77	Annx-7
9	VFD Drives Panel with converter duty oiled filled Input transformer & VFD Drives	Coronet Engineers Pvt Ltd	SAEL/KTL-023/19-20	22-11-2019	92.68	17.11		Annx-8

	Panel 90 KW for ACC Fan							
10	Battery and Battery Chargers with integral DCDB	Amara Raja Power Systems Ltd	SAEL/KTL-022/19-20	20-11-2019	12.50	11.10	12.27	Annx-9
11	Cooling Tower 250 Cubic Mtr per Hr	Mihir Engineers Pvt Ltd	SAEL/KTL-016/19-20	04-09-2020	14.28	1.97		Annx-10
12	Balance				1268.32	249.20		
	Total				9183.65	2929.36	2872.79	

d) Civil construction work (Non EPC cost): Construction supervision & pre-operative expenses, Land development, Tools & spares, Preliminary expenses, financial charges including up-front fee paid.

Reply:

C	Building & Civil Cost	Vendor	PO No	PO Date	PO Value	Payments Till Date	Invoices raised	Remark
1	General Civil Work, Structural and allied development Work	Singla Construction	SAEL/ KAITHAL/UNIT-12/001	01-11-2019	478.89	451.10	442.10	Annx-11
2	Steel (TMT Bars, MS Plates Etc.)				521.29	515.22	504.77	
3	Cement (PPC & OPC)				220.48	220.48	206.10	
4	Balance				429.69	138.09	104.65	
	Total				1,649.35	1,218.46	1,298.21	
D	Misc. Fixed Assets	Vendor	PO No	PO Date	PO Value	Payments Till Date	Invoices raised	Remark
1	Power Evacuation Line	Manav Power	SAEL/ KTL-020/19-20	19-10-2019	61.27	46.54	41.59	Annx-12
2	Balance				468.73	18.29	8.65	
	Total				530.00	64.83	50.24	
E	Contingency Provision for Cost Escalation	Vendor	PO No	PO Date	PO Value	Payments Till Date	Invoices raised	Remark
1	Contingency Provision for Cost Escalation				114.00			
F	Interest during Constrution	Vendor	PO No	PO Date	PO Value	Payments Till Date	Invoices raised	Remark
1	Interest during				748.00	101.00	101.00	

	Constrution							
G	Pre Oprative Expenses	Vendor	PO No		Total Value	Total Payment	Invoices raised	PO Status
1	Pre Oprative Expenses				190.00	183.29	183.29	
H	Other Cost	Vendor	PO No		Total Value	Total Payment	Invoices raised	PO Status
1	Margin for BG - HAREDA (20% on Rs 60 Lakhs)				12.00			
2	Margin for BG - HPPC (20% on Rs 150 Lakhs)				30.00			
3	Performance Security in favour of HAREDA (vide DD)				15.00			
4	Margin for Working Capital				534.00			
	Total				591.00	-	-	
				Total	14020.00	5587.00	5449.00	

ii) Power generation capacity with capacity utilisation factor and scheduled date of CoD.

Reply:

Power generation capacity is 15 MW.

iii) Capital subsidy, if any.

Reply:

Nil

iv) Documents in respect of Loans availed/tied up from Banks/F.I.s

Reply: As per point no. a above.

v) The calculations of depreciation including accelerated depreciation, if the Petitioners so intends to claim.

Reply:

As per HERC Order.

vi) Fuel stock holding period.

Reply:

Stock is of 4 months holding.

vii) Details of O&M expenses along with supporting documents.

Reply:

O&M expenses per MW is Rs. 44.70 lacs.

viii) Details of Auxiliary energy consumption. The same may be provided based on name plate capacity of auxiliary equipments as well as based on laboratory report.

Reply:

As per HERC Order.

ix) GCV of fuel and SHR of the power station with supporting details.

Reply:

The report of . Sigma Test & Research Centre dated 22.07.2017 has certified GCV of Paddy Straw with moisture of 4.75% as 4058 kCal/kg. The report of M/s. Delhi Test House dated 21.02.2017 has certified GCV of Paddy Straw on received basis with moisture of 10.88% as 3241 kCal/kg. The report of M/s. Force Technology dated 08.03.2018 has certified GCV of Paddy Straw, on received basis with moisture content of 9.6% as 3472 kCal/kg. M/s. Force Technology has further certified GCV of Paddy Straw on received basis as 3180 kCal/kg, on dry basis as 3580 kCal/kg and on dry, ash free basis as 4236 kCal/kg. Further, SHR has been calculated as 4200 kCal/kWh.

5. HPPC filed its reply to the Petition filed by the Petitioner, on an affidavit dated 27.07.2020. HPPC has submitted as under:-

a) That the Answering Respondent had filed a Petition No. HERC/PRO-45 of 2018 under Section 86(1)(b) of the Electricity Act, 2003 seeking source approval and also seeking approval for singing of PPA for procurement of power from paddy straw biomass based power projects which had been selected by HAREDA through RFP floated in this regard.

b) That the said Petition was disposed of by the Commission, vide order dated 03.01.2019, wherein apart from granting 'must-run status' to the Petitioner, following observations were made:-

"10. … Tariff shall be decided on the separate petition to be filed by the Generators under section 62 of the Electricity Act, 2003 ***wherein the ceiling tariff shall be the annual generic tariff of HERC of the year 2017-18 with appropriate factoring of the discount negotiated with the bidders****….*

11. ii)…

a) The definition of Tariff needs to be changed to read that the tariff payable to the IPP shall be year to year tariff determined by the Commission w.r.t. CoD of the project and the discount offered by the IPPs as part of the RFP shall be deducted from the year to year tariff determined by the Commission." ***(Emphasis supplied)***

c) That keeping in view the above mentioned observations, the Respondent amended the PPA and shared the draft of revised PPA with the Petitioner vide communication dated 20.02.2019. Thereafter, the Petitioner, with open eyes had entered into PPA dated 22.02.2019 with the answering Respondent. The said PPA executed between the parties define 'Tariff' as under:-

" ***Article 1- Definitions and Interpretation***

*38) **"Tariff"** means year to year rate payable by the Discoms @ tariff determined by HERC w.r.t. CoD of the project factoring the discount offered by the IPP as a part of the RfP for every kWh of delivered energy at the metering point subject to ceiling tariff i.e. annual generic tariff of HERC for the year 2017-18 with appropriate factoring of the discount negotiated with the bidders as a part of RfP."*

d) That the tariff is to be determined as per the terms of the PPA, as the terms of PPA entered into between the parties is sacrosanct in nature, the terms of which are binding and enforceable by law. It is further submitted that unless, the terms of the PPA are held illegal, they cannot be revoked/ modified by the Commission when the same has been validly executed between the parties. The Hon'ble Supreme Court in Civil Appeal no. 6399 of 2016 titled as ***Gujarat Urja Vikas Limited versus Solar Semiconductor Power Company (India) Private Limited and others*** has held that the terms of the contract between the parties cannot be substantially altered so as to prejudice the interest of parties. The relevant part of the order of Hon'ble Supreme Court is reproduced hereunder -

"In the case at hand, rights and obligations of the parties flow from the terms and conditions of the Power Purchase Agreement (PPA). PPA is a contract entered between the GUVNL and the first respondent with clear understanding of the terms of the contract. A contract, being a creation of both the parties, is to be interpreted by having due regard to the actual terms settled between the parties. As per the terms and conditions of the PPA, to have the benefit of the tariff rate at Rs.15/- per unit for twelve years, the first respondent should commission the Solar PV Power project before 31.12.2011. It is a complex fiscal decision consciously taken by the parties. In the contract involving rights of GUVNL and ultimately the rights of the consumers to whom the electricity is supplied, Commission cannot invoke its inherent jurisdiction to substantially alter the terms of the contract between the parties so as to prejudice the interest of GUVNL and ultimately the consumers."

Further, no unilateral alteration, amendment or modification of the terms of the agreement are allowed as per Clause 18.7 of the PPA. Thus, the present Application is to be decided in consonance with the terms of the PPA dated 22.02.2019.

e) That it is noteworthy to mention here that the order dated 03.01.2019 passed by this Commission has not been challenged by the Petitioner at any stage either by filing a review application or by way of appeal till date. Thus, the PPA as well as the said order dated 03.01.2019 has attained finality qua the Petitioner. It is submitted that on account of non-filing of review and/or appeal against the said order, vested rights have accrued in the favour of the Answering Respondent which cannot be taken away lightly. It is further submitted that the Petitioner had consciously agreed on the ceiling to the tariff as prescribed by the Commission by signing the PPA with the Answering Respondent.

f) That it is noteworthy to mention here that certain parties, namely M/s Jind Bio-energy LLP and M/s Fatehabad Bio-Energy LLP (not the Petitioner) had filed a Petition, seeking clarification of order dated 03.01.2019 (HERC/PRO-10 of 2019). The said Petition was disposed of by the Commission vide order dated 04.04.2019, wherein the Commission had observed:-

"11. The Commission observes that in the present case, the project developers, after consciously agreeing to a particular ceiling tariff and signing the PPA on that basis, have approached the Commission to seek further relief, which is not maintainable."

g) That the Petitioner is seeking to rely on the order dated 04.04.2019 to the extent of the observation made by the Commission that the issue may be re-visited at the time of determination of year to year tariff by the Commission on the Petitions filed by the Project Developers in this regard. The Petitioner is also ostensibly seeking to rely on the order dated 15.07.2019 passed in PRO-31 of 2019 whereby this Commission has allowed the Petition filed by M/s Jind Bio-Energy LLP and M/s Fatehbad Bio-Energy LLP and directed the Respondents to modify the PPA signed between the parties therein. In this regard it is submitted that the reliance of the Petitioner on the said orders passed by the Commission is misplaced. It is the case of the Answering Respondent that the said orders do not create any rights in rem, the benefit of which can be taken by the Petitioner. Since, the Petitioner had chosen not to challenge the order dated 03.01.2019 or the terms of PPA, the Petitioner cannot be permitted to rely on any subsequent orders passed at the behest of any other party not being the Petitioner.

Even otherwise, the order dated 15.07.2019 has been challenged by the Answering Respondent before the Hon'ble Appellate Tribunal for Electricity in DFR/23/2020 whereas order dated 03.01.2019 and 04.04.2019 have been challenged by M/s Jind Bio-Energy LLP and M/s Fatehabad Bio-Energy LLP vide Appeal no. 348 of 2019. These appeals are pending for adjudication before the Hon'ble APTEL.

h) That it is noteworthy to mention here that even as per the Letter of Intent (LOI) issued to the Petitioner, related to the determination of tariff, which is reproduced below, no enhancement of tariff as a deviation from the terms of PPA can be granted to the Petitioner:-

"The tariff quoted by the project developer is subject to the decision of HERC/HPPC in this regard and in no case escalation in tariff will be allowed at a later stage, what so ever the reason may be."

As is evident from the above, that the Petitioner has consciously agreed on the ceiling to the tariff as prescribed by the Commission by signing of the PPA with the Answering Respondent, thus the tariff is to be determined as per the PPA and the LOI and in no case tariff over and above the ceiling limit shall be allowed.

i) That the present Petition is untenable in the present form as the Petitioner has failed to submit any 'relevant documents'. It is submitted that no bills, invoices, statement of accounts or any other such documentary proof of the cost being incurred by the Petitioner Company has been attached with the present petition. It is further submitted that Section 62 of Electricity Act, 2003 provides for determination of tariff for supply of electricity by a generating company to distribution licensee in pursuance of agreement entered into between them. For the purpose of determination of tariff under section 62 of Electricity Act, 2003, the generating company is required to submit necessary details regarding various expenditure and cost associated with generation in order to enable determination of tariff for the project. The Project Specific Tariff under ibid section of Electricity Act, 2003 can only be exercised once the actual financial, technical and operational parameters are available and filed before this Commission. The Regulation 7(2) read with Regulation 11 of HERC RE Regulations, 2017 categorically provides that the petition of determination of tariff should be accompanied with information in prescribed forms along with technical and operational details, site specific aspects, premise for capital cost and financing plan etc along with breakup of capital cost. However, in the instant case the Petitioner has not filed the details of the actual cost components, its break up and technical & operational details of Project to enable determination of tariff. Thus, the present Petition is liable to be dismissed being devoid of any specific details.

j) That the Petitioner has attached only a CA Certificate with the present petition, which is not sufficient for carrying out prudence checks to establish the claims of the Petitioner with respect to the Project. Legitimacy of expenditure incurred on the Project cannot be ascertained without screening the bills/expenditure made by the Petitioner for the Project.

<u>REPLY TO 'PARAMETERS FOR TARIFF DETERMINATION'</u>

k) That the present petition is premature as the plant of the Petitioner is yet to be commissioned. It is suggested that once the plant is set up, the actual parameters can be ascertained at the time of demonstration of successful operation of the power plant by the Petitioner. It is further submitted that tariff is to be assessed keeping in view the definition of tariff under the PPA signed by the Petitioner i.e.- "*38)* ***"Tariff"*** *means year to year rate payable by the Discoms @ tariff determined by HERC w.r.t. CoD of the project factoring the discount offered by the IPP as a part of the RfP for* *every kWh of delivered energy at the metering point subject to ceiling tariff i.e. annual generic tariff of HERC for the year 2017-18 with appropriate factoring of the discount negotiated with the bidders as a part of RfP."*

l) That the Petitioner has neither attached any break up of capital cost nor any other document in support of the contention that the capital cost has been worked out @ Rs. 9.35 crores per MW. The Petitioner has simply stated that the variation in the capital cost is due to the latest technology that has been procured by Petitioner, however, no documentary evidence has been attached by the Petitioner to substantiate these facts. The petitioner has not mentioned the advantages that the project would have by incurring extra capital expenditure and how it would benefit the overall operations of the Project. In absence of any documents, mere pleadings are liable to be rejected being unreliable.

m) That the Petitioner has not attached any document to show that any contract has been entered between M/s Desein Pvt. Ltd. and the Petitioner. In absence of any documents, mere pleadings of the Petitioner are liable to be rejected being unreliable.

6. HPPC, has filed comprehensive submissions dated 24.09.2020 on Fuel Cost and GCV of Biomass Fuel (Paddy Straw), which is common for similarly placed petitions under consideration of the Commission, for determination of Tariff. HPPC has submitted as under:-

i) During the course of hearings of the above mentioned Petitions regarding determination of tariff for Plants fed on biomass fuel; it was observed that determination of cost of agricultural residue/biomass to be used as fuel in Power Plants is a critical factor. The majority of Biomass fuel considered in the instant Petitions is the Paddy Straw/ Rice Straw. The Generators like M/s Sainsons Power Industries located at Kurukshetra and M/s Naraingarh Sugar Mills (NSML) located at Ambala has claimed fuel cost which is highly varied. Another important determining factor of tariff determination is Gross Calorific Value (GCV) of Biomass fuel, for which also the Generators have made varying submissions. In an attempt to address these two relevant issues, HPPC is hereby filing comprehensive submissions analysing trend of Cost and GCV of Paddy Straw.

ii) The cultivation of paddy has increased tremendously over the years and is expected to increase in the future in response to the growing population. It is noticeable that this will lead to significant amounts of agricultural wastes annually, particularly rice straw. After harvesting the paddy crop, the paddy straw remains stranded in the field which require further labour and resources to remove from the field. As the paddy straw has very less commercial value, farmers instead used to burn the same to clear their field for next crop. The paddy straw has least commercial value amongst other biomass however, it requires machines such as balers to get it removed from the fields for further use as fuel. The Biomass fuel procurement industry is highly unregulated and therefore, the averments made by the generators regarding cost of biomass fuel could not be relied upon in absence of cogent evidence in support. The best method before us was to analyse the data provided by M/s Sainsons Industries Ltd. as they had been operating Power Plant on Paddy Straw for over 3 years now.

iii) It is pertinent to highlight here that as per data given by Department of Agriculture, Haryana published in International Journal of Science, Engineering and Technology Research (IJSETR), Volume 4, Issue 5, May 2015, the availability of paddy straw in various districts of Haryana was depicted as under-

Haryana (2013) Sr.No.	**District /Parameter**	**Paddy Area ('000 ha.)***	**Straw Burning Area ('000 ha.)**	**% of Paddy Area**
1	Ambala	79	12.27	15.54
2	Fatehabad	93	32.68	35.14
3	Jind	118	4.17	3.54
4	Kaithal	158	41.42	26.21
5	Karnal	162	54.33	33.54
6	Kurukshetra	118	39.82	33.75
7	Panipat	62	0.81	1.31
8	Sirsa	68	19.61	28.84
9	Sonipat	100	1.23	1.23
10	Yamunanagar	69	1.98	2.87
	Total	**1027**	**208.34**	**20.29**

As depicted above, the top 5 contiguous districts comprising Karnal, Kurukshetra, Fatehabad, Kaithal and Ambala contribute nearly 60% of the Paddy area. The Power Plants in question in instant Petitions before this Commission are also based in these top 5 districts of Haryana. Meaning thereby the availability of paddy in near vicinity to these plants is not of much concern.

iv) M/s Sainsons Industries has been operating plant on paddy straw for last 3-4 years. They have claimed actual fuel cost as ranging from Rs. 1985 per MT to Rs. 2416 per MT from FY 2017-18 to FY 2023-24. This cost comprises of fuel purchase cost, loading and unloading cost, handling cost, labour cost and storage cost. In line with the actual cost of paddy straw fuel admitted by M/s Sainsons Industries, HAREDA has also submitted an average rate of Rs. 1924.61/MT for the paddy straw. It is apparent that the fuel cost submitted by M/s Sainsons Industries is of vital consideration for this Commission as this appears to be the most reasonable cost quoted by the already operational power plant and all other power plants are still at nascent stage of setting up an efficient fuel procurement channel. In view thereof, the

Commission shall consider reasonable fuel cost with a ceiling of fuel cost of Rs. 1917/- per MT (i.e. Rs. 2083/- claimed by M/s Sainsons Industries minus handling cost of Rs. 165/- which is included in the O&M cost) for all power plants in the instant petitions. Further, from the perusal of fuel cost trend during FY 2017-18 to FY 2023-24 as claimed by M/s Sainsons Industries, it is evident that the fuel cost has increased with CAGR of 3.29% against the normative value of 5%. As such fuel cost escalation may be considered at the rate of 3.29% considering the trend projected by the M/s Sainsons Industries.

v) That the high variance in fuel cost quoted by NSML is towards the fuel transportation, storage and handling cost. The break-up of said cost is provided as under –

Components	**Rate per MT (In Rs.)**
Collection Charges of Fuel	1800
Storage Charges	400
Storage Losses	325
Transportation Charges	550-1000
Chopping	600
Total	**3775**

It is pertinent to note that the actual fuel collection cost has been admitted by the NSML as Rs. 1800 per MT, which is close to the fuel cost claimed by M/s Sainsons Industries. Evidently, NSML, contrary to the scheme of Regulations, is procuring paddy straw from far off areas leading to mismanagement and hence inefficiency in procurement of fuel. The inefficiencies on the part of generators cannot be loaded in the generation tariff which ultimately is to be borne by end consumers of electricity at large. Logically speaking, considering the law of economies of scale, the fuel cost of in case of NSML should be on lower side in comparison to M/s Sainsons Industries.

vi) It is pertinent to highlight that M/s Sainsons Industries in its Rejoinder dated 07.09.2020 has placed on record certain fuel slips, which evince that the paddy straw was procured for Rs. 1250/- per MT on 14.09.2019 and 15.09.2019. The said Bills are placed on page nos. 11/6 and 11/7 of the Rejoinder dated 07.09.2020. Meaning thereby the paddy straw procurement is evidently unregulated and the prices of paddy straw shall be taken on average yearly procurement price basis for the tariff determination. The year-wise comparison of cost of paddy straw, handling, storage and transportation cost is depicted hereunder for the ready reference of the Commission :-

Components	**2017-2018** (in Rs.)	**2018-2019** (in Rs.)	**2019-2020** (in Rs.)	**2020-2021** (in Rs.)
Cost of Paddy Straw	1575.6	1987.64	1554.82	1632.56

Loading and Unloading Cost	12.41	14.68	109.31	114.77
Material Handling cost	196.97	224.49	157.83	165.72
Direct labour cost	197.56	183.18	150.78	158.32
Lease Rent for Storage of Paddy Straw	1.98	6.15	10.74	11.28
Total	1984.54	2416.16	1983.5	2082.67

In view of the foregoing data submitted by M/s Sainsons industries, it would be safe to assume that fuel cost for the FY 2020-21 works out to be Rs. 2082.67 minus material handling cost of Rs. 165.72 and lease rent of Rs. 11.28, which comes to Rs. 1905.66 per MT.

vii) In the present petitions, HAREDA had also submitted a short reply by way of affidavit dated 14.09.2020, vide which they have submitted a survey report depicting retail cost of biomass fuel including paddy straw for various district of Haryana. Based on said data, it was submitted that average retail price of the paddy straw for the FY 2020-21 comes to Rs. 1924.61 per MT and the maximum procurement price comes to Rs. 2566.77. It is relevant here to note that the figures quoted by HAREDA are the retail fuel prices. The wholesale fuel purchase, as is done by the Generators, has to be evidently at lesser prices. Even though the criteria, area surveyed, methods adopted, factors taken in consideration have not been placed before this Commission so as to determine the efficacy of the survey report yet the figures depicted by HAREDA gives an estimate of the average retail paddy straw price in the State. It is submitted that the cost of paddy straw claimed by M/s Sainsons Industries is in fact more credible information available for consideration of this Commission as they have been procuring paddy straw for over 3 years now.

viii) The cost expended by the Generators towards fuel transportation, storage and handling largely depends on the efficacy of its fuel management channel. It is against the Regulations of this Commission to permit different Generators located in near vicinity to claim highly variable storage, handling and transportation cost. This only points to the inefficiencies of the Generator to be able to set up an effective fuel management channel. Admittedly, the inefficiencies of the Generators cannot fasten on to the consumers of Haryana in terms of additional cost.

ix) It is worthwhile here to note Regulation 35 of Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate)

Regulations, 2017, which an obligation on the generator to procure fuel from the nearby areas and set up an effective fuel management plan. The said regulation reads as under -

*“ **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.”

NSML has claimed fuel transportation cost in the range of Rs. 480/- to Rs. 575/- per MT. It becomes relevant to assess the availability of the fuel in the near vicinity of the Plant to NSML so as to ensure that the fuel need not be procured from farther places. Also NSML has included a portion of fuel handling and carrying cost in the O&M expenses claimed by them. It is imperative to ensure that if landed fuel cost is taken into account, the handling and carrying cost of fuel is to be excluded from the O&M cost. The Plant of NSML, as claimed in the DPR, has been design to handle fuel of all kinds for firing into the boiler. The Hon’ble Commission may consider taking into account reasonable landed fuel cost for determination of tariff.

x) The data provided by NSML fails to establish that the plant is run with cost-effective fuel available from a competitive market. Generation of electricity is a regulated business and it is therefore, the obligation of the Generator to procure fuel at competitive prices and ensure optimization of generation cost. The weighted average cost of Rs. 3800 per MT is highly exaggerated and far from being reasonable. The Electricity Act, 2003 clearly stipulates that the tariff determination has to be based on commercial principles besides safeguarding the interest of consumers and at the same time recovery of cost of electricity in a reasonable manner.

xi) That it is relevant here to refer to the report of Committee of Experts constituted by the CERC on “Performance/Viability of Biomass based plants operating in the Country including the prevailing biomass prices”. In the said report, the Committee analysed the fuel loss during transportation and on account of other factors and observed as under –

“ 2.3.7. There are other losses which are being encountered during the storage and handling of biomass, as per survey carried out by Dalkia Energy services limited under mandate from Rajasthan Renewable Energy Corporation Ltd. (RREC) to

assess such losses. Findings on various losses being encountered during storage of biomass in the power plant are shown in the table below.

Sr. No.	***Type of Losses***	***Description***	***Expected Losses (%)***	***Targeted Losses (%)***	***Remarks***
1	*Land Settlement*	*Grounded MCR cannot be lifted due to mixing with dust*	*0.7-1.0*	*0.4-0.5*	*MCR at bottom of heap gets mixed with sand and cannot be used in boiler. However, with leveling of ground and proper drainage system, land settlement loss can be reduced to about 0.4% - 0.5%.*
2	*Loss of Fuel during Sand Storm*	*Due to high velocity sand storm, MCR spreads out in nearby area up to half a KM and cannot be collected*	*0.5*	*0*	*This loss can be completely eliminated by covering the biomass with tarpaulin.*
3	*GCV Loss due to decaying of biomass*	*In rainfall, biomass gets wet and suffers from GCV loss due to decaying and release of methane gas in the atmosphere.*	*2*	*1.25-1.5*	*Decaying loss can be reduced to about 1.5% by covering the biomass with tarpaulin and proper drainage system in storage yard.*
Total Losses during Fuel Storage		***3.2-3.5%***		***1.65- 2.0%***	

2.3.8. The Ministry also considering the above report, further submitted that with better fuel management techniques such as proper leveling 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 provision of loss of fuel during storage at around 2% in the tariff order of various states for biomass based power plants……"

The above mentioned extract of report emphasise that the Generators can minimize losses by better fuel management techniques. The Commission shall encourage and ensure that the Generators have better fuel management channels by taking into account only reasonable losses and reasonable storage, handling and transportation cost for computing total fuel cost for tariff determination.

xii) It is also relevant to bring to the kind notice of the Commission that NSML in its submissions dated 10.09.2020 has stated that the blending ratio of the biomass fuel is 70:30. However, as per order of Government of Haryana dated 08.10.2019 granting must run status to NSML specified that the mandatory usage of paddy straw shall be 75% of total fuel. Thus, keeping into account fuel blending ratio of 75:25, the cost of fuel has to be adjusted as per the respective prices of different kinds of fuel.

xiii) The Government of Haryana during FY 2019-20 had announced an additional Rs. 1000 per MT incentive for custom hiring centres and straw balers units to support operational costs. This factor may be considered before considering any bald averments of generators claiming huge fuel operational costs. Thus, the cost of generation shall be determined by using realistic figures in the interest of overall welfare of the State.

xiv) M/s Sukhbir Agro Industries Ltd. has recently placed on record of this Commission a report of analysis of Rice Straw as fuel. The said report indicates GCV of Rice straw as 3472 kcal/kg with moisture of 9.6%. Further, the Test Certificate of paddy straw evinces GCV of 4058 kcal/kg with moisture of 4.75%. In view of the admitted case of the generator, it defies all logic to consider GCV of Paddy straw lesser than 3472 kcal/kg.

xv) It cannot be lost sight of that the Detailed Project Report submitted by M/s Sainsons Industries states GCV of 3500 kCal/kg. With sharp contrast to the figures claimed in the DPR, M/s Sainsons Industries and M/s Naraingarh Sugar Mills have now claimed GCV as low as 2787 kCal/kg and 2400 kCal/kg. Similarly, DPR of M/s Sukhbir Agro and M/s Hind Samachar specifies GCV for Dry paddy having 20% moisture as 2800 kcal/kg, which comes to 3239 kcal/kg with 10% moisture. As per Ministry of Renewable Energy, the GCV of Paddy Straw has to be decided based taking into account 10% moisture levels. Therefore, the GCV of paddy straw shall be considered not below 3239 kcal/kg, which is also fortified by the fuel test certificate appended by M/s Sukhbir Agro Ltd.

xvi) It is widely presumed that the higher the capacity of the plant, more effective will be the parameters of the Plant. However, M/s Naraingarh Sugar Mills has blatantly quoted parameters to their favour without any cogent evidence in support of the same. Such practice ought to be viewed strictly by the Hon'ble Commission.

xvii) Without prejudice to foregoing, 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. <u>Gross Calorific Value</u> (GCV): 3100 kcal/kg
iii. <u>O&M expenses:</u>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. Biomass Price: to be decided annually by a committee to be formed at State level representing State Commission, Nodal Agency, Government.

It is pertinent to mention here that 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.

xviii) Subsequent to recommendations of the Committee, Comments were invited from all stakeholders for finalizing 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."

xix) The 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 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."

xx) Further, MNRE vide its letter dated 30.09.2011 was of considered view that with better fuel management techniques such as proper leveling 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 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

xxi) It is further relevant to note here that 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.

xxii) It is the responsibility of Generators to devise and maintain an efficient Fuel handling System. The GCV of the fuel depends on the effective storage of the fuel. It is therefore, incumbent upon the Generators to ensure that the fuel is effectively stored to achieve the requisite GCV.

7. HPPC has filed additional submissions, dated 30.09.2020, on various parameters of the Plant, except cost of Fuel and GCV. HPPC has submitted as under:-

a) That the Petitioner has filed certain documents by way of an Index dated 07.09.2020 in support of value of various parameters urged by the Petitioner for tariff determination.

b) That the Commission vide Interim Order dated 11.08.2020, had directed the Petitioner to place on record following documents/ information :-

i) Details of capital cost along with bills/works order and documentary evidence of their payment, including the followings:-

a) Project cost appraised by the lenders/submitted to lenders.

b) Land cost/lease cost.

c) Estimated project cost (EPC), both offshore CIF and landed CIF and estimated associated cost to be incurred upto the date of commissioning.

d) Civil construction work (Non EPC cost): Construction supervision & pre-operative expenses, Land development, Tools & spares, Preliminary expenses, financial charges including up-front fee paid.

ii) Power generation capacity with capacity utilisation factor and scheduled date of CoD.

iii) Capital subsidy, if any.

iv) Documents in respect of Loans availed/tied up from Banks/F.I.s

v) The calculations of depreciation including accelerated depreciation, if the Petitioners so intends to claim.

vi) Fuel stock holding period.

vii) Details of O&M expenses along with supporting documents.

viii) Details of Auxiliary energy consumption. The same may be provided based on name plate capacity of auxiliary equipments as well as based on laboratory report.

ix) GCV of fuel and SHR of the power station with supporting details."

c) That the Petitioner has not submitted the complete documentation as required by the Commission and even the documents which were submitted are improper and unsubstantiated. The present reply, exposing the hollowness in parameters submitted by the Petitioner and refuting the contentions made in the Original Petition, is just and necessary for proper adjudication of the matter.

d) That the process of determination of tariff aims to bring about a balance between the competing objectives and to ensure to consumers the availability of electricity at reasonable and competitive rates at the same time reasonable recovery of cost of electricity. While determining tariff the Commission has to encourage competition, efficiency, economical use of resources, good performance and optimum investments besides safeguarding the consumers interest. To ensure the same operating parameters in tariff determination are required to be pegged at the "lower of normative and actuals". The operating norms must be designed to promote efficiency and to ensure that the gains which accrue on account of efficient operations are shared with the consumers of electricity.

e) That in the instant submissions, submissions on cost of fuel and GCV are not reiterated for the sake of brevity, which have been filed separately and may be read as part and parcel of the present reply. In the instant reply, submissions are being made hereunder on various other parameters of the Plant. The same may be read along with Reply filed by the Respondent to the Original Petition.

I. TARIFF DETERMINED BY THE COMMISSION IS SUBJECT TO CEILING TARIFF –

f) That the relief sought in the present Petition filed by the Petitioner is limited to determination of tariff for the project of the petitioner. There is no question of consideration of the background of the Petitions filed by two other generators in the present case. The project specific tariff determination under Section 62 of the Electricity Act is required to give effect to the provisions of PPA executed between the parties. As such, the tariff determination as sought by the Petitioner has to be done by the Commission as per the terms of the PPA, which governs the rights and obligations of the signatories to the PPA.

g) Without prejudice to foregoing, it is submitted that in the event the Commission, though not legally permissible and outside the scope of the present Petition, expresses any opinion to the effect that the decision to be given by Hon'ble APTEL on the appeals filed by the Respondent challenging orders of the Commission in PRO-45 of 2018 dated 03.01.2019, PRO-10 of 2019 dated 04.04.2019 and PRO-31 of 2019 dated 04.04.2019 will have any bearing to the case of the Petitioner, in that event the tariff determination exercise shall be kept pending till the decision of the

Hon'ble APTEL subject to right of the Respondent to challenge the said observation of the Commission.

II. DATE OF COMMISSIONING OF THE PROJECT -

h) The project of the Petitioner is yet to commission. The Petitioner had intimated that the project will be commissioned by March, 2021. That the costs and details contended by the Petitioner and expenditure incurred / to be incurred on the project are partially based on estimates. Also, it is apparent that Petitioner will not be able to burn paddy in the upcoming season. Thus, the tariff determination exercise in the case of the Petitioner may not be rushed and the parameters such as capital cost may be subject to thorough prudent check.

III. SUBMISSIONS ON VARIOUS PARAMETERS OF THE PLANT -

A. CAPITAL COST OF THE PROJECT :-

i) The Petitioner has urged following component of the Capital Cost and has given figures for the various components in a tabular statement :–

a) Land and Land Development Cost (Rs. 1014 lacs)
b) Plant and machinery Cost (Rs. 9183 lacs)
c) Building and Civil Cost (Rs. 1649 lacs)
d) Misc. Fixed Assets Cost (Rs. 530 lacs)
e) Contingency Provision for Cost Escalation (Rs. 114 lacs)
f) Interest during construction (Rs. 748 lacs)
g) Pre-Operative expenses (Rs. 190 lacs)
h) Other Cost (Rs. 591 lacs)

j) Under every component head referred above, the Petitioner has depicted figure for such component and a figure for 'Balance'. No details or explanation has been rendered as what is the 'Balance' figure under each component. There is no document in support of said figure meaning thereby the figure is unsubstantiated and may not have been even expended till date. No credence can therefore be given to 'Balance' figures and no comments can be offered on the same. However, apparently these figures are highly exaggerated and form a great proportion of the total cost.

k) The Petitioner has placed on record certain Purchase Orders and proof of payment on record. However, for various components such as Land cost, Power Evacuation Line, Contingency provision etc., no documents are placed on record. There are also discrepancies in the value of the Purchase Order and the payments made. For instance, Value of P.O. for Cement (PPC & OPC) has been stated as Rs. 220.48 lakhs. However, as against the said PO, the payment has been made for only Rs. 130.70 lakhs. The Commission may therefore make a prudent check of the Capital Cost before considering any part of the same for the tariff determination.

l) The Petitioner has also included cost of Power Evacuation Line in the Capital Cost. In this regard, it is submitted that the Power evacuation Line is a part of the transmission system of the Licensee which is duly transferred to the Licensee. The same cannot be classified as capital expended on development of project. Thus, the expenditure on such transmission system of Licensee cannot be passed through in the tariff.

m) Similarly, there is no provision in the RE Regulations to allow contingency provision for cost escalation as pass through in the tariff under the Capital Cost. The Petitioner has claimed an amount of Rs. 114 lakhs towards Contingency provision. Moreover, the contingency provision is subject to internal polices of the Generator's business plan. The amount of such provision is highly arbitrary and fictitious. If the generator is so apprehensive about escalation in costs in coming future, the tariff determination shall be done only after the Plant is commissioned and the complete cost details are evident on the record. There appears to be no logical basis to consider such unsubstantiated components of Capital Cost. It is pertinent here to refer to the Judgment of Hon'ble Central Electricity Regulatory Commission dated *19.02.2016 in Petition No. 226/Gt/2014 titled as NHPC Ltd v. Punjab State Power Corporation Limited and Ors* wherein it was held that Capital Cost as determined by the Commission after prudence check shall form the basis of determination of tariff for existing and new projects.

n) The Petitioner has included value of margin money kept for bank Guarantee submitted by them under the Capital Cost. This margin money has been stated as 20% of the cost of BG. Margin money is the amount retained as counter security by the bank while issuing Bank guarantee. The said margin money is therefore, not the amount expended. The same can therefore, not be classified as Capital Cost. The margin money is considered by the promoters in project financing. The said amount can be considered towards Working Capital of the Project but cannot be allowed as pass through under Capital Cost.

o) The Petitioner has also included Interest during construction (IDC) as part of the capital Cost. The IDC should be calculated at normative rate of interest on the expenditure incurred from time to time during the construction of the project.

p) The normative Capital Cost as specified by the Commission in its Order dated is Rs. 6.52 crore per MW. However, the Petitioner has claimed exorbitant cost of Rs. 9.33 crore per MW and that too without sufficient details and justification. In view of the foregoing, it is evident that the tabular statement given by the Petitioner cannot be relied upon in entirety. In absence of requisite documentation on record, the

Commission shall consider allowing only Normative Capital Cost of Rs. 6.52 Crore per MW in the determination of tariff.

q) The submission of the Petitioner is silent on the subsidy available for the project and so availed or to be availed. The Petitioner should undertake that there is no capital subsidy available for the project or otherwise subsidy applicable to the project should be deducted from the Project Cost.

B. STATION HEAT RATE (SHR) :-

r) The Petitioner has now contended SHR as high as 4200 kCal/kWh without any cogent basis. However, the Detailed Project Report submitted by the Petitioner specifies Turbine Heat Rate as 2485 kCal/kWh (Page 33 of the DPR) and Boiler efficiency as 87% (Page 36 of DPR). Thus, SHR as per DPR comes to 2856 kCal/kWh. The wide variation now contended by the Petitioner in SHR shall not be considered.

s) Even otherwise Petitioner has claimed huge Capital Cost, which shall mean that a Plant of superior specifications is installed by the Petitioner. In that event, the figures of Auxiliary consumption, Station heat Rate and associated O&M cost ought to have been favorable than the normative figures. It is widely accepted that the technical parameters improve with the capacity of the plant, as a corollary, the technical parameters of Petitioner plant ought to be better than normative parameters specified by the Commission which are applicable even to kW size small plants. Thus, SHR shall be restricted to 2856 kCal/kWh by the Commission for determination of tariff.

C. FUEL STOCK HOLDING PERIOD :-

t) The Fuel Stock holding period has been specified by the Petitioner as 4 months which is in line with the HERC RE Regulations and may be considered as such.

D. O&M COST :-

u) The HERC RE Regulations, 2017 provides for O&M expenses of Rs. 47.26 Lakhs per MW for Biomass based generation projects for FY 2020-21 with an escalation of 5.72% per year. As such, the O&M expenses have to be restricted to 47.26 lakhs per MW or actual whichever is less.

E. AUXILIARY CONSUMPTION :-

v) It is therefore, submitted that reasonable Auxiliary consumption with ceiling of normative parameter may be considered by the Commission. The parameters specified by the Commission in the RE Regulations (amended from time to time) takes into account holistic view of state specific factors vis-à-vis requirement of different nature of power plants. The Generator envisages setting up of a power plant considering the parameters specified in such Regulations. <u>Allowing a generator more</u>

than the normative parameters specified in the RE Regulations would thus, tantamount to promoting inefficient generation of electricity.

H. WORKING CAPITAL :-

w) Working capital shall be calculated as per the normative parameters specified in the Regulations. Thus, the fuel cost of 4 months shall be considered while calculating Working capital requirement for the plant during the off season.

I. INTEREST ON WORKING CAPITAL –

x) The interest on Working Capital and Loan shall be considered in line with the RE Regulations, 2017 and shall be restricted to normative parameters provided in the Regulations i.e. MCLR plus margin. The current MCLR of SBI is pegged at 6.65%, as such; the Commission may consider interest on Working Capital as 7.65% in line with the Regulations.

J. NO FUEL BILLS PLACED ON RECORD BY THE PETITIONER –

y) It is a matter of record that the Petitioner has not placed on record even a single fuel bill despite contending before this Commission that it has stocked up paddy straw already. Although the Respondent has made detailed submission on Fuel and GCV, yet it is reiterated that the plants of the Petitioner are also located in close proximity to that of M/s Sainsons Industries Private Ltd., who has placed on record fuel invoices. Considering the same, the fuel cost shall be restricted to Rs. 1917 per MT.

K. SALE OF RESIDUE

z) Clause 12.4 of the MYT Regulations provides for item wise gain to be shared between the generating company and the licensee in the ratio of 50:50. Considering the same, it is imperative that information be provided by the Generator regarding any residual of generation process. The sale value of same has to be taken into account for determination of tariff.

8. HAREDA, filed its comments on an affidavit dated 14.09.2020, submitting as under:-

a) The State Govt. has set up Haryana Renewable Energy Development Agency (HAREDA) in May, 1997 to act as nodal agency to implement various centrally and State sponsored schemes/ projects in the area of renewable energy in the State.

b) That HAREDA has been successfully implementing the renewable energy programmes in the State of Haryana and has been successful in bringing private investment in the State for encouraging renewable energy programmes in the State by implementing RE projects.

c) That the Petitioner has still not submitted the details in terms of parameters for determination of projects specific tariff for the present project and has simply/mechanically submitted the documents which are voluminous in nature. The Petitioner was expected to submit summary/details/calculations qua each parameter for the determination of tariff, however the petitioner has failed to submit the summary/details/calculations in this regard. Thus the documents as such submitted by the Petitioner in this conditions cannot be relied upon.

d) That this Commission vide order dated 20.12.2019 had inter-alia determined levelized tariff for biomass projects commissioned during the year 2019-20 and 2020-21 on the basis of parameter provided in the Haryana Electricity Regulatory Commission (Terms & Conditions for determination of tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificates) Regulations, 2017- Suo Motu. As per the ibid order dated 20.12.2019, this Commission while deliberating upon each and every parameter has determined a levelized tariff for a period of 20 years. It is suffice to state that the Commission while determining the ibid tariff has placed its reliance upon the then prevailing CERC tariff Regulations.

e) That recently, CERC vide Notification dated 23.06.2020 has come out with Regulations 2020, viz. Central Electricity Regulatory Commission (terms & conditions for tariff determination from Renewable Energy Sources) Regulations, 2020. The said Regulations have come into force with effect from 1st July, 2020 and unless reviewed earlier or extended by the Commission, shall remain in force upto 31.03.2023.

f) That so far as the parameters for determination of projects specific tariff are concerned, the answering respondent submit that this Commission may rely upon the parameters determined either by this Commission in its tariff order dated 20.12.2019 or/and upon the recent CERC tariff Regulations 2020. However, with regard to fuel cost, the answering respondent has made submissions in the foregoing paras.

g) That HAREDA with regard to determination of fuel cost has got carried out a sample survey through its field officers, who have collected data from various districts across the State with respect to various biomass resources used as fuel for generating RE power, which inter-alia includes paddy straw.

h) That as per survey conducted by the field officials of HAREDA, it has transpired that the minimum average procurement price of paddy straw for the year 2020-21 comes out to Rs.1924.61 per Metric ton, however the maximum average procurement price of paddy straw comes out to Rs.2566.77 per Metric ton.

i) That although the HAREDA has got conducted survey of various biomass fuels across the State, however since the instant matter concerns paddy straw as fuel, thus, specifically the average price of paddy straw have been mentioned in the preceding para.

j) That HAREDA has also sought information with regard to the fuel cost, from M/s Sainson Paper Industries Private Ltd., who is using biomass paddy straw as fuel for its existing CO-GEN RE facility of 3 MW, has inter-alia informed that the fuel cost while using paddy straw as fuel, after carrying out the entire process, comes out to Rs.2187/- per metric ton.

k) That HAREDA has made its best efforts to collect information with regard to cost of paddy straw for being used as RE fuel and has gathered the aforesaid information.

l) That HAREDA is also in a receipt of a communication dated11.09.2020 from the Agriculture Department, in response to its request letter dated 11.09.2020, seeking information with regard to cost of procurement of paddy straw in the State. Vide the communication dated 11.09.2020, the Agriculture Department has informed HAREDA that it has not conducted any study/assessment in this regard and thus, no such information as such is available on the subject matter.

m) That in case directed, a formal study from some reputed technical agency such as TERI / Agriculture University Hisar or any other agency as deemed fit by this Commission, can be got carried out.

Commission's Analysis and Order

9. The Commission heard the arguments of the parties at length as well as perused the written submissions placed on record by the parties. The Commission has carefully examined the Regulations occupying the field (hereinafter referred to as 'HERC RE Regulations, 2017') & its Orders dated 20.12.2019, regarding determination of levelized tariff for renewable power projects commissioned during the FY 2019-20 & FY 2020-21.

At the onset, the Commission took cognizance of the matter under consideration of Hon'ble Supreme Court regarding menace of stubble burning and consequent affidavit dated 08.08.2020 filed by Chief Secretary, Haryana, submitting the current status report on position of paddy straw burning including the efforts taken by the Government of Haryana to curtail the same. The Commission has considered the serious environmental issues arising from burning of paddy stubble in the State and NCR and power project of the Petitioner using paddy straw as a fuel can meet the social objectives and concerns of the National Green Tribunal as well as the Haryana Government. The 15 MW project of the Petitioner was selected by HAREDA for Kaithal District, by issuing Request for Proposal (RfP), with the objective of curbing this menace of paddy straw burning only by stating that the single fuel i.e. Paddy Straw will be permitted, at a discount of Rs. 0.71 per unit. Therefore, apart from commercial angle, the project has to be considered from social & environmental benefits attached to it.

It would be worth to recapitulate the earlier Orders of the Commission in the matter, wherein the Commission had observed as under:-

a) PRO-45 of 2018 (Order dated 03.01.2019):-

"8. The Commission observes that RfP was floated by HAREDA, as per the bid documents approved by the Commission and successful bidders were selected on the basis of discussions in the meeting of High Powered Committee (HPC) held on 11.01.2018 under the Chairmanship of Sh. D.S. Dhesi, Chief Secretary, Haryana for allotment of Paddy Straw based biomass power projects in Haryana, wherein it was decided as under:-

"PSNRE further informed the Committee that in this bidding process, the bidders were asked to offer maximum discount on the annual generic tariff of HERC/CERC of the year 2017-18 ***which shall be considered as ceiling tariff to arrive at the lowest tariff****. In case, the generic tariff for paddy straw based projects is not issued by HERC seven days prior to the last date of submission of bids then the generic tariff notified by the CERC for paddy straw based power projects for Haryana State shall be taken as the ceiling tariff and the discount is to be offered on this tariff only. As the CERC has also fixed two type of tariffs for paddy straw based power projects depending upon the boilder; the firms were asked to offer the discount on the lowest applicable tariff of Rs. 8.00 per unit. The matter of discount offered by the bidders was discussed by the Committee in detail and the committee was apprised that the* ***issue of factoring the discount in the applicable tariff will be decided by the HERC for which a petition will be filed for fixation of tariff." (emphasis added)***

9. xxxxxxxxxxxxxxx

10. In view of the approval already accorded to the bid documents the Commission, under Section 86(1)(b) of the Electricity Act, 2003, approves the proposed sources from which power shall be procured by the HPPC / Discoms through power purchase agreement(s) approved by the Commission. Tariff shall be decided on the separate petition to be filed by Generators under section 62 of the Electricity Act, 2003, wherein the ceiling tariff shall be annual generic tariff of HERC of the year 2017-18 with appropriate factoring of the discount negotiated with the bidders. The tariff petition shall include DPR approved by HAREDA and all other relevant documents to arrive at the reasonable capital cost and all other tariff components."

b) PRO-10 of 2019 (Order dated 04.04.2019):-

"10. The Commission has also examined the views expressed by HAREDA that "……the ceiling tariff of Rs. 8 per unit was mentioned only to select developers based

on the maximum discount on tariff offered by them". The Commission is of the considered opinion that the ceiling tariff forming the basis of selection of developers can't be different than the ceiling tariff to be considered by the Commission while determination of year to year tariff, on the petition to be filed by the selected bidders.

11. The Commission observes that in the present case, the project developers, after consciously agreeing to a particular ceiling tariff and signing PPA on that basis, have approached the Commission to seek further relief, which is not maintainable.

12. However, before parting with the instant petition, the Commission decides that the <u>issue may be re-visited at the time of determination of year to year tariff</u> by the Commission on the Petitions to be filed by the Project Developers in this regard."

c) PRO-31 of 2019 (Order dated 15.07.2019):-

"4. The Commission heard the arguments of the parties at length as well as perused the application/reply filed in the matter and takes note of the following para 11.iia of the Commission's Order dated 03.01.2019 approving the procurement of 49.8 MW power from paddy straw biomass based power projects (HERC/PRO-45 of 2018):-

"ii) The Commission has perused the draft PPAs for four paddy straw based power projects submitted for its approval. The Commission has noticed a few aberrations in the same as under:-

a) The definition of Tariff needs to be changed to read that the tariff payable to the IPP shall be the year to year tariff determined by the Commission w.r.t. CoD of the project and the discount offered by the IPPs as part of the RFP shall be deducted from the year to year tariff determined by the Commission."

The Commission observes that the PPA signed between HPPC and the Petitioners on 22.02.2019 defines "Tariff" at clause no. 38 of Article 1 of the PPA as under:-

"Tariff" means year to year rate payable by the Discom @ tariff determined by HERC w.e.t. CoD of the project factoring the discount offered by the IPP as a part of the RfP for every kWh of delivered energy at the metering point subject to the ceiling tariff i.e. annual generic tariff of HERC for the year 2017-18 with appropriate factoring of the discount negotiated with the bidders as a part of the RfP."

The Commission observes that it was not open for the HPPC to deviate from the definition of the word "Tariff" from the definition approved by the Commission in its Order dated 03.01.2019. The reference of the ceiling tariff in the ibid Order of the Commission dated 03.01.2019 is for the Commission to consider while determining year to year tariff on the petition to be filed by the Petitioners for determination of *tariff. The same does not form part of the term of PPA. The terms of the PPA has to be necessarily as per the approval of the same granted by the Commission.”*

10. The Commission has taken note of various Appeals filed before the Hon’ble Appellate Tribunal for Electricity challenging the aforesaid Orders i.e. Order dated 15.07.2019 by HPPC (DFR/23/2020) and Orders dated 03.01.2019 & 04.04.2019 by M/s Jind Bio-Energy LLP and M/s Fatehabad Bio-Energy LLP with Petitioner as the Respondent (Appeal no. 348 of 2019).

11. Accordingly, subject to the decision of Hon’ble Appellate Tribunal for Electricity in the Appeals mentioned above, the Commission has proceeded to examine each component relevant for the purpose of tariff determination. Various components of tariff, as per the submissions of the Petitioner, HPPC and HAREDA, have been tabulated as under:-

Parameters	Claimed by Petitioner	HPPC submission	HAREDA submission	HERC RE Regulations, 2017, for Air Cooled, Travelling Grate Boiler for Biomass (Single Fuel Paddy Straw)
Capital Cost Rs. Million/ MW	93.46	Normative	Nil	65.20
Loan, Equity Component	70:30	70:30	Nil	70:30
CUF	Nil	Nil	Nil	60% (Stabilization)
CUF	Nil	Nil	Nil	65% 1st year including Stabilization
CUF	80%	Nil	Nil	80% 2nd year onwards
O&M Rs. Million/MW	4.47	4.47	Nil	4.47
O&M escalation	5.72%	5.72%	Nil	5.72%
Depreciation	Normative	Normative	Nil	5.38% (first 13 years)
RoE	Normative	Normative	Nil	14%
Interest on term loan	Normative	8.65% (current SBI MCLR 6.65%)	Nil	10.13% (SBI MCLR -1 year tenor average of July-Dec 19 i.e. 8.13% + 2%)
Interest on working capital	Normative	7.65%	Nil	9.13% (SBI MCLR -1 year tenor average of July-Dec 19 i.e. 8.13% + 1%)
Auxiliary consumption	Normative	Reasonable with Normative as ceiling	Nil	12.50% (1st year)
Auxiliary consumption	Normative	Reasonable with	Nil	12% (2nd year onwards)

		Normative as ceiling		
Fuel Cost (Rs/MT)	Normative	1917	Minimum: 1925 Maximum: 2567	Rs. 3605.61/MT, Sainson it is taken Rs. 2082/MT FY 2020-21
Fuel price escalation	Normative	Normative	Nil	5%
Heat Rate (kCal/kWh)	As per DPR: 2856 Claimed: 4200	2856	Nil	4200
GCV (kCal/kg)	Delhi Test House: 3241, Spectro Analytical Labs: 3239, Force Technology 3180-4236	3239 with 10% moisture	Nil	3100
Discount rate	Normative	Normative	Nil	11.29%(70x10.13%+30x14%)
Working capital norms: a) Fuel stock b) O&M c) Receivable d) Maintenance spares	 4 months 1 month 2 months 15% of O&M	 4 months 1 month 2 months 15% of O&M	Nil	 6 months 1 month 2 months 15% of O&M

The Commission observes that except for capital cost, interest on term loan/working capital, fuel cost, heat rate and GCV, where different views have been taken by the Petitioner and Respondents, all other parameters for tariff determination are to be taken as per the norms specified in the HERC RE Regulations, 2017, read with the Order dated 20.12.2019. The Commission further observes that fuel stock taken for calculating working capital requirement, although mentioned in HERC RE Regulations, 2017 as six months, but, Petitioners and Respondents have agreed to shorter period i.e. four months. Accordingly, the same has been considered by the Commission, while determining tariff for the project of the Petitioner.

The Commission now proceeds to examine and decide the capital cost, interest on term loan/working capital, fuel cost, heat rate and GCV, to be considered for determination of tariff in the present case:-

a) **Capital cost:**

The Petitioner submitted that although the Commission in its RE Regulations, 2017 has provided for capital cost @ Rs 6.52 crores per MW, but, in their case the same is actually working out to be Rs. 9.35 crores per MW (Rs. 140.20 Crore for 15 MW), which includes margin money, performance security, margin for working capital, preoperative expenses, contingency provisions, miscellaneous fixed assets, balance etc. The Petitioner further submitted that against the total cost of Rs. 140.20 Crore, actual payment made till date is Rs. 55.87 Crore, which includes preoperative expenses of Rs. 1.90 Crore. The Petitioner submitted that higher capital cost was incurred due to use of latest state of the art technology (patented by BWSC Denmark), for setting up the 100% Paddy Straw Biomass Power Plant technology which is being set up for the first time in India, to ensure 80% PLF.

Per-contra, HPPC has averred that the Petitioner has filed a statement of capital cost of Rs. 140.20 crore, which is not substantiated by corroborative evidence. HPPC has also raised objections on the claim for margin money, performance security, margin for working capital, preoperative expenses, contingency provisions, miscellaneous fixed assets, balance, power evacuation line etc., included in the said statement of cost.

The Commission has considered the contentions of the parties and observe that the Commission, in its Order dated 20.12.2019, has recognized biomass power projects based on single fuel (Paddy) and determined the ceiling limit of project cost of such projects based on Air Cooled Travelling Grate Boiler as Rs. 6.52 Crore/MW. The Commission has further observed that the Petitioner has not provided any corroborative evidence in support of the cost proposed to be incurred by it. Further, the Petitioner in its own wisdom opted for technology costing higher than the normative cost, without receiving in principle concurrence of HPPC, HAREDA or the Commission after establishing benefits in terms of tariff to the end use electricity consumers of Haryana. At this stage, the Petitioner has submitted that it has chosen Denmark based technology of Boiler which is costlier than the normal boiler. It has added the consultancy charges and other incidental cost of technology transfer, without establishing the fact that the purported technology would improve the operating efficiency of the plant and the cascading benefit to the end use electricity consumer. Accordingly, the Commission is not concurred with the arguments of the Petitioner tested on the anvil of cost-benefit analysis and hence, restricts the capital cost of the project to the norm specified in the HERC RE Regulations, 2017 read with its Order dated 20.12.2019 i.e. Rs. 6.52 Crore/MW. Resultantly, the total cost of 15 MW power plant is approved at Rs. 97.80 Crore, comprising of Land - Rs. 10.14 Crore, as claimed by the Petitioner

and remaining capital cost i.e. depreciable assets (balancing figure)– Rs. 87.66 Crore, for the purpose of tariff determination.

b) **Interest on Term Loan:** The Commission observes that the Petitioner as well as the Respondent have agreed to the Debt Equity Ratio of 70:30 provided in Regulation 12 of HERC RE Regulations, 2017. However, w.r.t. the interest on term loan, HPPC has argued that current Marginal Cost of Lending Rate (MCLR) of SBI is 6.65%. The interest on term loan may be considered accordingly.

The Commission has examined the relevant provisions of HERC RE Regulations, 2017 which provides that the interest rate shall be considered as the average Marginal Cost of funds based lending rate (MCLR) (one-year tenor) of SBI prevailing during the last available six months plus a margin of up to 200 basis points i.e. 2%.

The Commission observes that average of SBI MCLR (one year tenor) of SBI during the last six months i.e. April-September 2020, works out to 7.11%. Consequently, in line with the HERC RE Regulations, 2017, the Commission approves interest on term loan as 9.11% (i.e. Average SBI MCLR (one-year tenor) plus a margin of up to 200 basis points).

c) **Interest on working capital:** The Commission observes that the Petitioner has sought interest on working capital as per the relevant provisions of HERC RE Regulations, 2017. HPPC has argued that current Marginal Cost of Lending Rate (MCLR) of SBI is 6.65%. Accordingly, the interest on working capital may be considered at 7.65% i.e. MCLR + 1% margin.

The Commission has examined the relevant provisions of HERC RE Regulations, 2017 which provides that the interest rate shall be considered as the average Marginal Cost of funds based lending rate (MCLR) (one-year tenor) of SBI prevailing during the last available six months plus a margin of up to 200 basis points i.e. 2%.

The Commission observes that average of SBI MCLR (one year tenor) of SBI during last six months i.e. April-September 2020, works out to 7.11%. In line with the HERC RE Regulations, 2017, the Commission approves interest on working capital as 8.11%, including a margin of 1% given the prevailing rate of interest seeking lower levels.

d) **Fuel Cost:**

The Petitioner has not made any submissions on the fuel cost to be considered for tariff determination. However, another similarly placed Petitioner M/s. Sainsons Paper Industries Private Limited, whose case (PRO-68 of 2019) was also heard on

the same date as the instant petition, on the basis of historical actual data available with it, since it is generating since July, 2017 on Paddy Straw based fuel has submitted in its reply on affidavit dated 14.07.2020 that average cost of fuel has been recorded as Rs. 1985/MT, Rs. 2416/MT, Rs. 1983/MT, Rs. 2083/MT & Rs. 2187/MT for the FY 2017-18, FY 2018-19, FY 2019-20, FY 2020-21 & FY 2021-22.
HAREDA has submitted that as per survey conducted by the field officials of HAREDA, the minimum average procurement price of paddy straw for the year 2020-21 comes out to Rs. 1924.61 per Metric ton, however the maximum average procurement price of paddy straw comes out to Rs. 2566.77 per Metric ton. HAREDA has also sought information with regard to the fuel cost, from M/s. Sainsons Paper Industries Private Limited, who is using biomass paddy straw as fuel for its existing Co-Gen RE facility of 3 MW since last three years, who has informed that the fuel cost while using paddy straw as fuel, after carrying out the entire process, comes out to Rs. 2187/MT.

Per-contra, HPPC argued that fuel cost submitted by the M/s. Sainsons Paper Industries Private Limited, comprises of fuel purchase cost, loading and unloading cost, handling cost, labour cost and storage cost, without supported by relevant bills/invoices and without establishing that all such components are not been included in the O&M costs. Accordingly, a reasonable fuel cost with a ceiling of fuel cost of Rs. 1971/- per MT (i.e. Rs. 2083/- claimed by M/s. Sainsons Paper Industries Private Limited minus handling cost of Rs. 112/- which is included in the O&M cost) may be considered by the Commission for FY 2020-21.
M/s. Sainsons Paper Industries Private Limited, in its rejoinder dated 29.09.2020, has refuted the submissions of HPPC that the fuel handling cost of Rs. 165/- is included in the O&M cost and has submitted that the cost associated with the activities undertaken by the Fuel Supply Contractors as well as other activities handled by the Petitioner are an essential part of the Fuel Cost.
The Commission, in its Order dated 26.10.2020, after carefully examining the submissions and counter submissions of all the parties to case no. HERC/PRO-68 of 2019, in the matter of M/s. Sainsons Paper Industries Private Limited, had after examining all facts and figures available on record passed the fuel cost for the **FY 2020-21 as Rs. 2082/MT i.e. Rs. 1983/MT for the FY 2019-20 with escalation of 5% thereon.**

The Commission observes that the Petitioner's plant is yet to be commissioned and they have not produced any significant data or any other

claim on fuel cost to be considered by the Commission in the determination of tariff. However, fuel cost approved for similarly placed generator using paddy straw as fuel i.e. M/s. Sainsons Paper Industries Private Limited can not be ignored, which has been approved based upon the historical actual data provided by the said generator. Accordingly, after carefully examining the averment of all the parties the Commission considers it appropriate to approve Fuel Cost for FY 2020-21 at Rs. 2082/MT. The annual escalation shall be considered as per the HERC RE Regulations, 2017 i.e. 5% per annum.

e) **Gross Calorific Value (GCV):**

The Petitioner has placed on record reports of approved labs on analysis of Rice Straw as fuel, as under:-

The report of M/s. Sigma Test & Research Centre dated 22.07.2017 has certified GCV of Paddy Straw with moisture of 4.75% as 4058 kCal/kg. The report of M/s. Delhi Test House dated 21.02.2017 has certified GCV of Paddy Straw on received basis with moisture of 10.88% as 3241 kCal/kg. The report of M/s. Force Technology dated 08.03.2018 has certified GCV of Paddy Straw, on received basis with moisture content of 9.6% as 3472 kCal/kg. M/s. Force Technology has further certified GCV of Paddy Straw on received basis as 3180 kCal/kg, on dry basis as 3580 kCal/kg and on dry, ash free basis as 4236 kCal/kg. Evidently, the GCV as submitted by the Petitioner varies from 3180 kCal/kg to 4236 kCal/kg.

HPPC has argued that as per Ministry of Renewable Energy, the GCV of Paddy Straw has to be decided by taking into account 10% moisture content. Therefore, the GCV of paddy straw may not be considered below 3239 kcal/kg, which is also corroborated by the fuel test certificate appended by the Petitioner.

The Commission observe that GCV of 3100 kCal/kg was considered in its Order dated 20.12.2019 while determining levelized tariff for Biomass Air Cooled Travelling Grate Boiler using Single Fuel – Paddy Straw. While, HPPC, replying on the report of the approved lab dated 13.02.2016, has argued that GCV should not be taken below 3239 kCal/kg.

The Commission, in its Order dated 26.10.2020, after carefully examining the submissions and counter submissions of all the parties to case no. HERC/PRO-68 of 2019, in the matter of M/s. Sainsons Paper Industries Private Limited, had decided that GCV shall be taken as per the norm specified by the Commission in its Order dated 20.12.2019.

Accordingly, after carefully examining the averment of all the parties the Commission, considers it appropriate to approve GCV at 3100 kCal/kg i.e. the norms approved by the Commission in its ibid Order.

f) **Station Heat Rate (SHR):**

The Petitioner has not made any specific submission w.r.t. SHR and has sought the same as per HERC RE Regulations, 2017 i.e. 4200 kCal/kWh. While HPPC has argued that it is without any cogent basis. HPPC has submitted that SHR as per the Detailed Project Report submitted by the Petitioner comes to 2856 kCal/kWh (based on Turbine Heat Rate as 2485 kCal/kWh -Page 33 of the DPR) and Boiler efficiency as 87% -Page 36 of DPR). Further, the huge Capital Cost claimed by the Petitioner would mean that a Plant of superior specifications is installed by the Petitioner. In that event, the figures of Auxiliary consumption, Station heat Rate and associated O&M cost ought to have been favorable than the normative figures. It is widely accepted that the technical parameters improve with the capacity of the plant, as a corollary, the technical parameters of Petitioner plant ought to be better than normative parameters specified by the Commission which are applicable even to kW size power plants.

The Commission observe that in the DPR dated March, 2019 submitted by the Petitioner with HAREDA, the Specific Fuel Consumption has been mentioned as 1.1 kg/kWh at para 6.48. Further, at nnexure F/IX to the DPR, the Petitioner, while calculating the cost of fuel required, has mentioned Specific Fuel Consumption as 1.1 kg/kWh. With the GCV already approved in the preceding para at 3100 kCal/kg, the Station Heat Rate is derived at 3410 kCal/kWh.

Accordingly, after carefully examining the averment of all the parties the Commission, and on the basis of claim of Specific Fuel Consumption of 1.1 kg/kWh made by the Petitioner in its Detailed Project Report submitted with HAREDA, approves SHR at 3410 kCal/kWh.

g) **Sale of Bio-fertilizer:**

The Commission has considered the submissions of HPPC that Clause 12.4 of the MYT Regulations provides for item wise gain to be shared between the generating company and the licensee in the ratio of 50:50. Considering the same, sale value of any residual of generation process has to be taken into account for determination of tariff. The Petitioner has refuted the submissions of HPPC by arguing that the provision is applicable for the licensees who are required to get their Annual Revenue Requirements (ARR) approved from the Commission on annual basis and the ARRs, approved for the previous years, are to be trued up based on actual performance.

The Commission has considered the contention of HPPC on this issue. It is observed the residual of generation process should only be the ash of paddy straw, which may not have any commercial value. Therefore, given the un-certainly regarding the quantum of ash generation and its pricing, the Commission is of the considered view that the proceeds for sale of ash shall be accounted for on actual basis i.e. the Generator shall maintain separate monthly account recording the production and sale of ash. The HPPC may inspect the same at any point of time and the IPP shall provide all possible assistance to the officer / officials of the Discoms / HPPC including production of bills / amount realised etc. Accordingly, on a quarterly basis, the verified proceeds netted off for any associated direct / indirect cost shall be shared in 50:50 ratio between the Discoms / HPPC and the Generator herein.

The Income Tax shall not form part of the tariff determined by the Commission and the Petitioner shall raise the bill for reimbursement of MAT / Corporate Tax applicable on Return on Equity in 12 equal installments which shall be payable by the beneficiaries.

The Commission observes that RfP was floated by HAREDA, as per the bid documents approved by the Commission and successful bidders were selected on the basis of discussions in the meeting of High Powered Committee (HPC) held on 11.01.2018 under the Chairmanship of Sh. D.S. Dhesi, Chief Secretary, Haryana for allotment of Paddy Straw based biomass power projects in Haryana, wherein it was decided as under:-

"PSNRE further informed the Committee that in this bidding process, the bidders were asked to offer maximum discount on the annual generic tariff of HERC/CERC of the year 2017-18 which shall be considered as ceiling tariff to arrive at the lowest tariff. In case, the generic tariff for paddy straw based projects is not issued by HERC seven days prior to the last date of submission of bids then the generic tariff notified by the CERC for paddy straw based power projects for Haryana State shall be taken as the ceiling tariff and the discount is to be offered on this tariff only. As the CERC has also fixed two type of tariffs for paddy straw based power projects depending upon the boilder; the firms were asked to offer the discount on the lowest applicable tariff of Rs. 8.00 per unit. The matter of discount offered by the bidders was

discussed by the Committee in detail and the committee was apprised that the issue of factoring the discount in the applicable tariff will be decided by the HERC for which a petition will be filed for fixation of tariff."

Further, HAREDA issued the Letter of Intent (LOI) on 16.02.18 to Hind Samachar Ltd and intimated that:-

"The recommendations of the Standing Technical Committee (STC) and the Technical Appraisal Committee (TAC) meeting were placed before the High Powered Committee (HPC) headed by the Chief Secretary, Haryana in accordance with Clause No. 20.4 of the State RE Policy 2005 in its meeting held on 11.01.2018. In the meeting of HPC, following decisions were taken for allotment.

For district Kaithal, project of 15 MW be allocated to M/s Sukhbir Agro Energy Ltd. at a discount of Rs. 0.71 per unit."

Based on the parameters discussed in the foregoing paras, the Commission determines the tariff for 20 years life of the project, appended to the present Order (Annexure – A).

The tariff payable is the year to year tariff computed by the Commission for the entire life of the project.

The Commission has examined the issue of factoring in of discount of Rs. 0.71 per unit applicable on the bidding tariff of Rs. 8/- per unit and decides that the same shall be reduced from year to year tariff so determined by the Commission in Annexure – A. Consequently, the tariff payable shall be year to year tariff determined herein reduced by Rs. 0.71/kWh.

In terms of the above Order, the present petition is disposed of.

This Order is signed, dated and issued by the Haryana Electricity Regulatory Commission on 26.10.2020.

Date: 26.10.2020	**(Naresh Sardana)**	**(Pravindra Singh Chauhan)**
Place: Panchkula	**Member**	**Member**

ANNEXURE - A

TARIFF (Rs / kWh) for 20 years from FY 2020-21 onwards for 20 years		
Biomass generic tariff (Air Cooled - Travelling Grate Boiler) Single Fuel (Paddy) - Sukhbir Agro Energy Ltd for 15 MW		
Table of Parameters	**per MW**	**15 MW**
Capital cost (Rs. in Million / MW)	65.20	978.00
Cost of Land (Rs. Million)		101.40
Remaining capital cost		876.60
Residual value (10%)	6.52	87.66
Total depreciation (Rs in Million / MW)	58.68	788.94
Loan component (Rs in Million / MW)	45.64	684.60
Equity component (Rs in Million / MW)	19.56	293.40
CUF (stablisation)	60%	60%
CUF 1st year (Including Stabilisation)	65%	65%
CUF 2nd year onwards	80%	80%
O&M (Rs Million / MW)	4.47	4.47
O&M escalation	5.72%	5.72%
Depreication (first 13 years)	5.38%	5.38%
ROE (1st 10 years)	14%	14%
ROE (11th year onwards)	14%	14%
Income tax (MAT) **pass through**	0.00%	
Income tax (Corporate Tax) **pass through**	0.00%	
Interest on term loan	10.13%	9.11%
Interest on working capital	9.13%	8.11%
Auxiliary consumption (1st year)	12.50%	12.50%
Auxiliary consumption (2nd year onwards)	12%	12%
Fuel cost (Rs. / MT)	3605.61	2,082.00
Fuel price escalation	5%	5%
Heat rate (Kcal/kWh)	4200	3410
GCV (Kcal/kg)	3100	3100
Discount rate WACC	11.29%	11.29%
Levellised tariff	4.92	4.92

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Fuel cost with escalation		2082	2186	2295	2410	2531	2657	2790	2930	3076	3230	3391	3561	3739	3926	4122	4328	4545	4772	5011	5261
O&M with escalation		4.47	4.73	5.00	5.28	5.58	5.90	6.24	6.60	6.98	7.37	7.80	8.24	8.71	9.21	9.74	10.30	10.88	11.51	12.17	12.86
Outstanding Loan amount		684.60	631.94	579.28	526.62	473.95	421.29	368.63	315.97	263.31	210.65	157.98	105.32	52.66							
Loan repayment		52.66	52.66	52.66	52.66	52.66	52.66	52.66	52.66	52.66	52.66	52.66	52.66	52.66							
Interest on loan		59.97	55.17	50.37	45.58	40.78	35.98	31.18	26.39	21.59	16.79	11.99	7.20	2.40							
Working Capital																					
Fuel cost for four (4) months		34.61	84.26	88.47	92.90	97.54	102.42	107.54	112.92	118.56	124.49	130.72	137.25	144.11	151.32	158.89	166.83	175.17	183.93	193.13	202.78
One month O&M		0.37	0.39	0.42	0.44	0.47	0.49	0.52	0.55	0.58	0.61	0.65	0.69	0.73	0.77	0.81	0.86	0.91	0.96	1.01	1.07
2 Months receivables		37.35	62.43	63.86	65.40	67.06	68.84	70.75	72.80	75.00	77.34	79.84	82.51	85.36	85.06	89.09	93.32	97.77	102.43	107.33	112.48
Maintenance spares15% of O&M		0.67	0.71	0.75	0.79	0.84	0.89	0.94	0.99	1.05	1.11	1.17	1.24	1.31	1.38	1.46	1.54	1.63	1.73	1.82	1.93
Total		73.00	147.79	153.50	159.53	165.90	172.64	179.75	187.26	195.19	203.55	212.38	221.69	231.50	238.53	250.25	262.56	275.48	289.05	303.30	318.27
Interest on working capital		5.92	11.99	12.45	12.94	13.45	14.00	14.58	15.19	15.83	16.51	17.22	17.98	18.77	19.35	20.30	21.29	22.34	23.44	24.60	25.81
Variable Costs																					
Parameters	**Derivation**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Capacity (MW)	**1**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**
Generation (Million Units)	A	45.33	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12	105.12
Auxiliary Cons (%)		12.50%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Generation (Ex-bus Mllion Units)	A1	39.67	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51	92.51
Station Heat Rate (Kcal/kWh)	B	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410	3410
Calorific Value of fuel(Kcal/Kg)	C	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100	3100
Overall Heat (Gcal)	D= (A*B)	154586	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459	358459
Fuel Consumption (MT)	E=(D*1000/C)	49866	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632	115632
Cost of fuel per MT `	F	2082	2186	2295	2410	2531	2657	2790	2930	3076	3230	3391	3561	3739	3926	4122	4328	4545	4772	5011	5261
Total Cost of fuel (Rs Million)	G=E*F/10^6	103.82	252.78	265.42	278.69	292.63	307.26	322.62	338.75	355.69	373.48	392.15	411.76	432.34	453.96	476.66	500.49	525.52	551.79	579.38	608.35
Fuel Cost (Rs/kWh)	H=G/A1	2.62	2.73	2.87	3.01	3.16	3.32	3.49	3.66	3.85	4.04	4.24	4.45	4.67	4.91	5.15	5.41	5.68	5.96	6.26	6.58
Fixed Costs																					
O&M Expenses		4.47	4.73	5.00	5.28	5.58	5.90	6.24	6.60	6.98	7.37	7.80	8.24	8.71	9.21	9.74	10.30	10.88	11.51	12.17	12.86
Depreciation		47.16	47.16	47.16	47.16	47.16	47.16	47.16	47.16	47.16	47.16	47.16	47.16	47.16	25.12	25.12	25.12	25.12	25.12	25.12	25.12
Interest on Term Loan		59.97	55.17	50.37	45.58	40.78	35.98	31.18	26.39	21.59	16.79	11.99	7.20	2.40							
Interest on Working Capital		5.92	11.99	12.45	12.94	13.45	14.00	14.58	15.19	15.83	16.51	17.22	17.98	18.77	19.35	20.30	21.29	22.34	23.44	24.60	25.81
Return on Equity		2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74
Income tax on ROE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost		120.26	121.78	117.72	113.69	109.72	105.78	101.90	98.07	94.29	90.57	86.91	83.32	79.79	56.42	57.89	59.45	61.09	62.81	64.62	66.53
Fixed cost (Rs/kWh)		3.03	1.32	1.27	1.23	1.19	1.14	1.10	1.06	1.02	0.98	0.94	0.90	0.86	0.61	0.63	0.64	0.66	0.68	0.70	0.72
Total cost (Fixed+variable)		224.08	374.57	383.14	392.39	402.34	413.04	424.52	436.82	449.98	464.05	479.06	495.07	512.13	510.38	534.55	559.94	586.60	614.60	644.01	674.88
Tariff (Rs/kWh)		5.65	4.05	4.14	4.24	4.35	4.47	4.59	4.72	4.86	5.02	5.18	5.35	5.54	5.52	5.78	6.05	6.34	6.64	6.96	7.30
Per unit tariff components																					
Per unit O&M Expenses		0.11	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.10	0.11	0.11	0.12	0.12	0.13	0.14
Per Unit Depreciation		1.19	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Per Unit Interest on term loan		1.51	0.60	0.54	0.49	0.44	0.39	0.34	0.29	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Per Unit Interest on working capital		0.15	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.27	0.28
Per Unit Return on equity		0.07	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Per unit income tax		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levellised tariff																					
Discount factor		1.00	0.899	0.807	0.73	0.65	0.59	0.53	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.22	0.20	0.18	0.16	0.15	0.13
Discounted tariff components(variable)	3.64	2.62	2.46	2.32	2.19	2.06	1.95	1.84	1.73	1.63	1.54	1.45	1.37	1.29	1.22	1.15	1.09	1.03	0.97	0.91	0.86
Discounted tariff components(fixed)	1.28	3.03	1.18	1.03	0.89	0.77	0.67	0.58	0.50	0.43	0.37	0.32	0.28	0.24	0.15	0.14	0.13	0.12	0.11	0.10	0.09
Discounted tariff components (Total)		5.65	3.64	3.34	3.08	2.84	2.62	2.42	2.23	2.07	1.92	1.78	1.65	1.53	1.37	1.29	1.22	1.15	1.08	1.02	0.96
Fuel (Variable Cost) Rs/kWh		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Levellised Tariff (Rs/kWh)	4.92																				