

TELANGANA STATE ELECTRICITY REGULATORY COMMISSION #11-4-660, 5th Floor, Singareni Bhavan

Red Hills, Hyderabad - 500 004 Phone: 23397556, 23397381 / 399 Fax: 23397481

PUBLIC NOTICE

IN THE MATTER OF DETERMINATION OF TARIFF FROM MUNICIPAL SOLID WASTE (MSW) TO ENERGY

- 1. M/s. Shalivahana (MSW) Green Energy Limited, M/s. Hema Sri Power Projects Limited and M/s. RDF Power Projects Limited have filed petitions before the Commission to determine the Tariff for generation of energy from Municipal Solid Waste (MSW) with a view to supply electricity to Telangana State Power Distribution Licensees (TSDISCOMS). Out of the above three plants only the Power Plant of M/s. Shalivahana was commissioned and attained COD on 14.04.2011. All the three petitioners have stated in their filings that they are utilising MSW after processing into Refused Derived Fuel (RDF). They also stated that the required MSW has been allocated by the erstwhile GoAP through various G.Os. from adjoining Urban Local Bodies (ULBs).
- 2. The Commission after hearing and examining the parties, decided to go for Generic Tariff instead of determining case wise tariff. The generic tariff is also useful for future plants and for incentivizing the plants under advance stage of construction.
- 3. The Commission has hired the services of a consulting firm i.e., M/s. KPMG to examine the petitions in respect of Capital cost and Technical parameters (the extracts of which are attached herewith) and to make further study on the characteristics of MSW made available to these plants. They were also directed to make a comparative study of the process of determination of tariff adopted by CERC and other SERCs.

4. The important features (parameters) useful for determination of tariff as suggested by the consultants and under active consideration of the Commission are given below and the resulting working sheets for generic tariff are attached herewith for reference.

Tariff Parameters	Unit	Values for Norm based RDF projects	Values for Norm based MSW projects
PLF (1st Year)	%	65.0%	65.0%
PLF (2nd Year onward)	%	80.0%	75.0%
Installed Capacity	MW	1.00	1.00
Useful Life	Years	20.00	20.00
Auxiliary Consumption	%	11.00%	12.00%
Capital Cost per MW	Rs Lakh	700	1400
O&M Expenses per MW	Rs Lakh	42	84
O&M Escalation	%	5.72%	5.72%
Salvage Value	%	10.00%	10.00%
Depreciation Rate-1 (1st 15 years)	%	4.70%	4.68%
Depreciation Rate-2 (16th year onward)	%	3.90%	3.95%
Loan Tenure	Years	15.00	15.00
Interest on Term Loan	%	11.50%	11.50%
Interest on Working Capital	%	12.50%	12.50%
Debt	%	70%	70%
Return on Equity (upto 15th Year)	%	16%	16%
Return on Equity (From 16th Year)	%	16%	16%
WACC	%	12.85%	12.85%
Discount Rate - Levelised Tariff	%	12.85%	12.85%
MAT	%	20.35%	20.35%
Corporate Tax Rate	%	33.00%	33.00%
Income Tax Holiday	Years	10.00	10.00
SHR	kCal/kWh	4,000	NA
GCV	kCal/kg	2,500	NA
Fuel Cost	Rs./Tonne	1,800	NA
Fuel Cost escalation	%	5%	NA
		Actual	Actual
If any tipping fee by GoT or any local		amount	amount
body to be reduced from fuel cost		received	received

5. Suggestions and comments are invited from all the stakeholders and public at large, so as to reach the undersigned on or before 12.02.2016 by 5.00PM. In addition to the above, the

Commission desires to hear the views on the following issues.

(i) Whether to determine levelised tariff (for useful life of plant) or for first 5

years for variable cost and fixed cost for entire life of plant as cost of RDF varies

from time to time;

(ii) In case of M/s. Shalivahana, since the plant is already in operation for 5 years and

selling power through open access, determination of fixed charges can be taken

from the generic tariff according to number of years in operation and variable cost

as per the present levelised tariff now under determination.

Sd/-SECRETARY

Date : 22 -01-2016 Place : Hyderabad

HEMA SRI POWER PROJECTS LTD

U.S. T.			cc	ST CALCULA	ATION SHEET							
			12.6 M	W MSW Bas	ed Power Proje	ct						
	Vib	halapuram Vil	lage, Moth	ney Mandal,	Near Suryapet	, Karimnagar	Dist. A.P.					
	Plan	t capacity	kWH	12600								
	Plant	Operation	Days	330								
	Ri	unning	Hrs	24								
	Ra	ted PLF	%	70	A	As per CERC O	rder 09-1:	1-2010				
	No of Un	its Generated	kWH	69854400								
	Auxiliary	Consumption		10%	A	s per CERC O	rder 09-11	1-2010				
	Net Exp	ported units	kWH	62868960								
	Net Genera	ited units / Day		190512								
S.No	Name of Fuels	Fuel Usage	GCV	SHR	SFC	Quantity	Rate /	Fuel Cost	Specific Fuel Pric			
		% kCal/k		% kCal/kg		kcal/kWH	kg/kWH	MT	Rs./MT	Rs.	Rs./ kWH	
1	RDF	75	1650	4000	2.42	384.87	1150	442601	2.32			
.2	BIOMASS	10	3000	4000	1.33	28.22	2300	64906	0.34			
3	Coal	15	3200	4000	1.25	39.69	3400	134946	0.71			
4						452.78		642453	3.37			
5									3.37			
1		COG				On Actual Ba	eie					
	A	Fuel cost Rs./kWH										
	В	Operational & N	laintanance	Cost			Rs./k		0.60			
		cost - I					113.71		3.97			
	А	Depreciation					Rs./k	WH	0.69			
	В	interest on term	loan				Rs./k		1.39			
	С	interest on Work	ring Capital				Rs./k		0.12			
	D	RoE		Rs./k		0.12						
		cost - II		Sum	(A+B+C+D)		Rs./k	2.70				
III		Total Cost of G	eneration		Sum (I	+11)	Rs./k	6.67				



COST CALCULATION SHEET

RDF POWER PROJECTS LIMITED

	Chinara	vulapally Vil, I	Bibinaga	r Mandal,	Nalgond	a Dist- And	hra Prac	lesh - Ind	dia
	Plant	capacity	kWH	11000					
	Plant	Operation	Days	330					
	Ru	nning	Hrs	24					
	Rat	ted PLF	%	70		As per CER	C Order	09-11-20	010
	No of Uni	ts Generated	kWH	60984000					
	Auxiliary	Consumption		10%		As per CER	C Order	09-11-20	010
	Net Exported units Net Generated units / Day Name of Fuels Fuel Usage % RDF 75 BIOMASS 25		kWH	54885600					
*	Net Genera	ted units / Day		166320					
S.No	Vol Fuellisage		GCV	SHR	SFC	Quantity	Rate / MT	Fuel Cost	Specific Fuel Price
		%	kCal/kg	kcal/kWH	kg/kWH	MT	Rs./MT	Rs.	Rs./ kWH
1	RDF	75	1600	4000	2.50	495.00	810	400950	2.41
2	BIOMASS	25	3000	4000	1.33	88.00	2200	193600	1.16
3									
4	2 2		23 3000			583.00		594550	3.57
5									
				*					
1		COG	× 16.7			On Actua	l Basis	,	
	Α	Fuel cost	2				Rs./	kWH	3.57
	В	Operational & N	√laintanar	nce Cost			Rs./	kWH	1.25
		cost - I				2 6016			4.82
L. W.	Α	Depreciation		-		7.30/1	Rs./	kWH	0.78
	В	interest on tern	n Ioan				Rs./	kWH	1.65
	С	interest on Wor	king Capi	tal		- inpleater	Rs./	kWH	0.06
	D	RoE				in the las	Rs./	kWH	1.18
		cost - II		Sum (A	\+B+C+D)	rider and t	Rs./	kWH	3.67
131	Ţ	otal Cost of Go	eneratio	n	Sun	n (I+II)	Rs./	kWH	8.49



						, , , , , , , , , , , , , , , , , , ,	٠.		,						
40		語風器為	非智慧	COST CALCUL	ATION SHEET	拉纳可来	不理解的		與論學						
13.00	alex. The	and the	12. 1	MW MSW Bas	ed Power Proj	ect									
		Reblad	evpalli Villag	ge, Sultanaba	d Mandal, Kari	mnagar Dist	t. A.P.								
2,	Plan	nt capacity	kWH	12000				*							
1. 14.		Operation	Days	330											
P - 1227		tunning	Hrs	24											
yka,	11	ated PLF	%	70	, A	s per CERC (Order 09-1	1-2010							
	No of U	nits Generated	kWH	66528000											
i i	Auxiliary	Consumption.		10%	A	s per CERC (Order 09-1	1-2010							
	Net Ex	ported units	kWH	59875200					,						
	Net Gener	ated units/Day		201600	34										
SiNo	Name of	Faral (Regga	(FIG.7)	SHR	SFC	Quantity	terte /	Firel	अञ्चलकार स्टाबी धराव						
· ·		%	kCal/kg	kcal/kWH	kg/kWH	MT	Rs./MT	Rs.	Rs./ kWH						
1	RDF	75 DIPC	1650	4000	2.42	366.55	1150	421527	2.09						
2	BIOMASS	10	3000	4000	1.33	. 26.88	2300	61824	0.31						
3	Coal	15	3200	4000	1.25	37.80	3400	128520	0.64						
4			,			431.23		611871	3.04						
5					-										
1		COG				On Actual Ba	asis								
	Α	Fuel cost	*:					kWH	3.04						
	В	Operational & M	aintanance Co	st	1		Rs./	kWH	0.60						
		cost - I							3.64						
	A	Depreciation						kWH	0.69						
	В	interest on term	loan,		48			kWH	1.39						
	С	Interest on Work	ing Capital					kWH	0.12						
	· D	RoE						kWH	0.50						
		cost - II		Sum (A	+B+C+D)	Visit Street No. 200	Rs./kWH 2.70								
111		inal cost of	ର େ(ଖଳ (ଥି ପ))		Sum (l	×0).	RS ₇ /	kWF)	6.629						

i I Cur.

MSW Norm Based Tariff

Norm Based MSW	Unit	Value																			
PLF (1st Year)	%	65.0%																			
PLF (2nd Year onward)	%	75.0%																			
Useful Life	Years	20																			
Auxiliary Consumption	%	12.00%																			
Capital Cost per MW	Rs Lakh	1,400																			
Land cost per MW	Rs Lakh	5																			
O&M Expenses per MW	Rs Lakh	84																			
O&M Escalation	%	5.72%																			
Salvage Value	%	10.00%																			
Depreciation Rate-1 (1-15 year)	%	4.68%																			
Depreciation Rate-2 (16th year onward	%	3.95%																			
Loan Tenure	Years	15																			
Interest on Term Loan	%	11.50%																			
Interest on Working Capital	%	12.50%																			
Working Capital norms																					
-O&M Expenses	month	1																			
-Maintenance (% of O&M)	%	15%																			
-Receivables	months	2																			
Debt	%	70%																			
Return on Equity	%	16%																			
Discount Rate	%	12.85%																			
	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
PU Tariff Components	Rs/KWh	6.68	5.75	5.71	5.67	5.64	5.62	5.60	5.59	5.59	5.59	5.60	5.62	5.65	5.69	5.73	5.68	5.88	6.09	6.32	6.55
Discount Factor		1.00	0.89	0.79	0.70	0.62	0.55	0.48	0.43	0.38	0.34	0.30	0.26	0.23	0.21	0.18	0.16	0.14	0.13	0.11	0.10
Discounted Tariff Components	Rs/KWh	6.68	5.09	4.48	3.95	3.48	3.07	2.71	2.40	2.12	1.88	1.67	1.49	1.32	1.18	1.06	0.93	0.85	0.78	0.72	0.66
Levelised Tariff	Rs/KWh	5.82																			

Norm Based RDF Power Projects	Unit	Value																			
PLF (1st Year)	%	65.0%																			
PLF (2nd Year onward)	%	80.0%																			
Installed Capacity	MW	1.00																			
Useful Life	Years	20.00																			
Auxiliary Consumption	%	11.00%																			
Capital Cost per MW	Rs Lakh	700																			
O&M Expenses per MW	Rs Lakh	42																			
O&M Escalation	%	5.72%																			
Salvage Value	%	10.00%																			
Depreciation Rate-1 (1-15 year)	%	4.70%																			
Depreciation Rate-2 (16th year onward)	%	3.90%																			
Loan Tenure	Years	15.00																			
Interest on Term Loan	%	11.50%																			
Interest on Working Capital	%	12.50%																			
Debt	%	70%																			
Return on Equity (upto 10th Year)	%	16%																			
Return on Equity (From 11th Year)	%	16%																			
WACC	%	12.85%																			
Discount Rate - Levelised Tariff	%	12.85%																			
MAT	%	20.35%																			
Corporate Tax Rate	%	33.00%																			
Income Tax Holiday	Years	10.00																			
SHR	kCal/kWh	4,000																			
GCV	kCal/kg	2,500																			
Fuel Cost	Rs./Tonne	1,800																			
Fuel Cost escalation	%	5%																			
•	Unit Ye	ar 0 Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	ome 10	ar o lear i	Total Z	roui o	1041 4	Total 5	Total 0	rour r	1041 0	roun J	roun IV		100112	roal lo	1001114	roal 15	roal lo	1001111	roun 10	100113	roat 20

PU Variable Cost

Discount Factor

Levelised Tariff

PU Tariff Components

Levelised Fixed Tariff (20 Years)

Rs/KWh

Rs/KWh

Rs/KWh

Rs/KWh

3.24

6.75

1.00

7.44

3.00

3.40

6.28

0.89

3.57

6.44

0.79

3.75

6.61

0.70

3.93

6.80

0.62

4.13

7.00

0.55

4.34

7.21

0.48

4.55

7.44

0.43

4.78

7.68

0.38

5.02

7.93

0.34

5.27

8.20

0.30

5.53

8.49

0.26

5.81

8.80

0.23

6.10

9.13

0.21

6.41

9.47

0.18

6.73

9.78

0.16

7.06

10.23

0.14

7.42

10.71

0.13

7.79

11.21

0.11

8.18

11.73

0.10