

Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC Boiler- Punjab					Annexure-2.8D
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	12.00%
			Auxiliary Consumption after stabilization	%	12.00%
			PLF(Stabilization for 6 months)	%	80.00%
			PLF(during first year after Stabilization)	%	80.00%
			PLF(second year onwards)	%	80.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125.00
			During stabilization period	Kcal/kWh	4125.00
		Biomass	Base Price	Rs/T	4158
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	48.20
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Biomass Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		388.01	407.41	427.78	449.17	471.62	495.20	519.96	545.96	573.26	601.92	632.02	663.62	696.80	731.64	768.22	806.64	846.97	889.32	933.78	980.47	1,029.49	1,080.97	1,135.02	1,191.77	1,251.36
Per unit Variable Cost	Rs/kWh		6.29	6.60	6.93	7.28	7.64	8.02	8.43	8.85	9.29	9.75	10.24	10.75	11.29	11.86	12.45	13.07	13.72	14.41	15.13	15.89	16.68	17.52	18.39	19.31	20.28
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		48.20	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		39.71	36.97	34.23	31.49	28.75	26.01	23.28	20.54	17.80	15.06	12.32	9.58	6.85	4.11	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		22.13	23.11	24.14	25.23	26.36	27.56	28.82	30.14	31.52	32.98	34.51	36.12	37.81	39.58	41.44	43.18	45.28	47.47	49.77	52.19	54.84	57.50	60.29	63.22	66.30
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
Total Fixed Cost	Rs Lakh		173.65	173.74	173.96	174.30	174.77	175.38	176.13	177.03	178.09	179.31	180.70	182.27	184.02	185.96	188.11	174.23	179.58	185.16	190.97	197.04	212.39	218.98	225.86	233.03	240.50
Per unit Fixed Cost	Rs/kWh	2.94	2.81	2.82	2.82	2.82	2.83	2.84	2.85	2.87	2.89	2.91	2.93	2.95	2.98	3.01	3.05	2.82	2.91	3.00	3.09	3.19	3.44	3.55	3.66	3.78	3.90

Levilled tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	9.86	6.29	6.60	6.93	7.28	7.64	8.02	8.43	8.85	9.29	9.75	10.24	10.75	11.29	11.86	12.45	13.07	13.72	14.41	15.13	15.89	16.68	17.52	18.39	19.31	20.28
O&M expn	Rs/kWh	1.09	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93
Depreciation	Rs/kWh	0.44	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	0.32	0.64	0.60	0.55	0.51	0.47	0.42	0.38	0.33	0.29	0.24	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.54	0.36	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.56	0.59	0.61	0.64	0.67	0.70	0.73	0.77	0.81	0.85	0.89	0.93	0.98	1.02	1.07
RoE	Rs/kWh	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
Total COG	Rs/kWh	12.81	9.10	9.42	9.75	10.10	10.47	10.87	11.28	11.72	12.18	12.66	13.17	13.71	14.27	14.87	15.50	15.89	16.63	17.41	18.23	19.08	20.12	21.06	22.05	23.09	24.17
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	6.29																										
Levilled Tariff (Fixed)	2.94																										
Levilled Tariff	9.23	Rs/Unit																									

Determination of Additional Depreciation for BIOMASS Projects

Depreciation amount	90%																										
Book Depreciation rate	5.28%																										
Tax Depreciation rate	40%																										
Additional Depreciation	20%																										
Income Tax (MAT)	17.472%																										
Income Tax (Normal Rates)	34.944%																										
Capital Cost	652.00																										
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Accelerated Depreciation																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15	
Tax Benefit Levellised	7.86																										
Electricity Generation (Levellised)	5.91																										
Levellised benefit	0.13	Rs/Unit																									

Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC Boiler- Rajasthan					Annexure-2.8E
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	12.00%
			Auxiliary Consumption after stabilization	%	12.00%
			PLF(Stabilization for 6 months)	%	80.00%
			PLF(during first year after Stabilization)	%	80.00%
			PLF(second year onwards)	%	80.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125.00
			During stabilization period	Kcal/kWh	4125.00
		Biomass	Base Price	Rs/T	3470.25
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	48.20
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Biomass Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		323.83	340.02	357.02	374.87	393.62	413.30	433.96	455.66	478.44	502.36	527.48	553.86	581.55	610.63	641.16	673.22	706.88	742.22	779.33	818.30	859.21	902.17	947.28	994.65	1,044.38
Per unit Variable Cost	Rs/kWh		5.25	5.51	5.79	6.07	6.38	6.70	7.03	7.38	7.75	8.14	8.55	8.97	9.42	9.89	10.39	10.91	11.45	12.03	12.63	13.26	13.92	14.62	15.35	16.12	16.92
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		48.20	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		39.71	36.97	34.23	31.49	28.75	26.01	23.28	20.54	17.80	15.06	12.32	9.58	6.85	4.11	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		19.00	19.83	20.69	21.60	22.56	23.57	24.62	25.73	26.90	28.12	29.41	30.76	32.18	33.68	35.24	36.68	38.44	40.30	42.24	44.28	46.54	48.78	51.14	53.61	56.20
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
Total Fixed Cost	Rs Lakh		170.52	170.46	170.51	170.67	170.96	171.38	171.94	172.63	173.47	174.46	175.60	176.92	178.40	180.06	181.91	183.93	186.17	188.63	191.31	194.22	197.36	200.74	204.36	208.23	212.35
Per unit Fixed Cost	Rs/kWh	2.86	2.76	2.76	2.76	2.77	2.77	2.78	2.79	2.80	2.81	2.83	2.85	2.87	2.89	2.92	2.95	2.97	2.80	2.88	2.97	3.06	3.31	3.41	3.51	3.62	3.73

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	8.23	5.25	5.51	5.79	6.07	6.38	6.70	7.03	7.38	7.75	8.14	8.55	8.97	9.42	9.89	10.39	10.91	11.45	12.03	12.63	13.26	13.92	14.62	15.35	16.12	16.92
O&M expn	Rs/kWh	1.09	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93
Depreciation	Rs/kWh	0.44	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	0.32	0.64	0.60	0.55	0.51	0.47	0.42	0.38	0.33	0.29	0.24	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.46	0.31	0.32	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.59	0.62	0.65	0.68	0.72	0.75	0.79	0.83	0.87	0.91
RoE	Rs/kWh	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Total COG	Rs/kWh	11.09	8.01	8.27	8.55	8.84	9.15	9.47	9.82	10.18	10.56	10.97	11.39	11.84	12.31	12.81	13.34	13.63	14.25	14.91	15.60	16.32	17.23	18.03	18.86	19.74	20.66
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	5.25																										
Int. on working capital	2.86																										
Levillised Tariff	8.11	Rs/Unit																									

Determination of Additional Depreciation for BIOMASS Projects

Depreciation amount		90%																									
Book Depreciation rate		5.28%																									
Tax Depreciation rate		40%																									
Additional Depreciation		20%																									
Income Tax (MAT)		17.472%																									
Income Tax (Normal Rates)		34.944%																									
Capital Cost		652.00																									
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Accelerated Depreciation																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.00%	35.00%	21.00%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15	
Tax Benefit Levellised	7.86																										
Electricity Generation (Levellised)	5.91																										
Levellised benefit	0.13	Rs/Unit																									

Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC Boiler- Tamil Nadu					Annexure-2.8F
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	12.00%
			Auxiliary Consumption after stabilization	%	12.00%
			PLF(Stabilization for 6 months)	%	80.00%
			PLF(during first year after Stabilization)	%	80.00%
			PLF(second year onwards)	%	80.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)	%	21.52%
			Discount Rate (equiv. to WACC)		8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125.00
			During stabilization period	Kcal/kWh	4125.00
		Biomass	Base Price	Rs/T	3435.60
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	48.20
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Biomass Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		320.59	336.62	353.46	371.13	389.68	409.17	429.63	451.11	473.66	497.35	522.21	548.33	575.74	604.53	634.76	666.49	699.82	734.81	771.55	810.13	850.63	893.16	937.82	984.71	1,033.95
Per unit Variable Cost	Rs/kWh		5.19	5.45	5.73	6.01	6.31	6.63	6.96	7.31	7.68	8.06	8.46	8.89	9.33	9.80	10.29	10.80	11.34	11.91	12.50	13.13	13.78	14.47	15.20	15.96	16.75
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		48.20	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		39.71	36.97	34.23	31.49	28.75	26.01	23.28	20.54	17.80	15.06	12.32	9.58	6.85	4.11	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		18.85	19.66	20.52	21.42	22.37	23.36	24.41	25.51	26.67	27.88	29.15	30.49	31.90	33.38	34.93	36.35	38.10	39.93	41.86	43.88	46.12	48.34	50.68	53.12	55.69
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
Total Fixed Cost	Rs Lakh		170.36	170.29	170.33	170.49	170.77	171.18	171.73	172.41	173.23	174.21	175.35	176.65	178.12	179.77	181.60	167.40	172.41	177.62	183.06	188.73	203.67	209.82	216.24	222.93	229.90
Per unit Fixed Cost	Rs/kWh	2.86	2.76	2.76	2.76	2.76	2.77	2.77	2.78	2.79	2.81	2.82	2.84	2.86	2.89	2.91	2.94	2.71	2.79	2.88	2.97	3.06	3.30	3.40	3.50	3.61	3.73

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	8.15	5.19	5.45	5.73	6.01	6.31	6.63	6.96	7.31	7.68	8.06	8.46	8.89	9.33	9.80	10.29	10.80	11.34	11.91	12.50	13.13	13.78	14.47	15.20	15.96	16.75
O&M expn	Rs/kWh	1.09	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93
Depreciation	Rs/k/Wh	0.44	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	0.32	0.64	0.60	0.55	0.51	0.47	0.42	0.38	0.33	0.29	0.24	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.46	0.31	0.32	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.57	0.59	0.62	0.65	0.68	0.71	0.75	0.78	0.82	0.86	0.90
RoE	Rs/k/Wh	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
Total COG	Rs/kWh	11.01	7.96	8.21	8.49	8.78	9.08	9.40	9.74	10.10	10.48	10.88	11.30	11.75	12.22	12.71	13.23	13.51	14.13	14.79	15.47	16.19	17.08	17.87	18.70	19.57	20.48
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	5.19																										
Levllised Tariff (Fixed)	2.86																										
Levllised Tariff	8.05	Rs/Unit																									

Determination of Additional Depreciation for BIOMASS Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	652.00

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15
Tax Benefit Levellised	7.86																									
Electricity Generation (Levellised)	5.91																									
Levellised benefit	0.13	Rs/Unit																								

Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC Boiler- Telangana					Annexure-2.8G
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	12.00%
			Auxiliary Consumption after stabilization	%	12.00%
			PLF(Stabilization for 6 months)	%	80.00%
			PLF(during first year after Stabilization)	%	80.00%
			PLF(second year onwards)	%	80.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)	%	21.52%
			Discount Rate (equiv. to WACC)		8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125.00
			During stabilization period	Kcal/kWh	4125.00
		Biomass	Base Price	Rs/T	3492.30
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	48.20
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Biomass Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		325.89	342.18	359.29	377.25	396.12	415.92	436.72	458.55	481.48	505.56	530.83	557.38	585.24	614.51	645.23	677.49	711.37	746.94	784.28	823.50	864.67	907.91	953.30	1,000.97	1,051.01
Per unit Variable Cost	Rs/kWh		5.28	5.54	5.82	6.11	6.42	6.74	7.08	7.43	7.80	8.19	8.60	9.03	9.48	9.96	10.46	10.98	11.53	12.10	12.71	13.34	14.01	14.71	15.45	16.22	17.03
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		48.20	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		39.71	36.97	34.23	31.49	28.75	26.01	23.28	20.54	17.80	15.06	12.32	9.58	6.85	4.11	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		19.10	19.93	20.80	21.72	22.68	23.69	24.76	25.87	27.05	28.28	29.57	30.94	32.36	33.87	35.44	36.89	38.66	40.53	42.48	44.53	46.80	49.06	51.43	53.92	56.53
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
Total Fixed Cost	Rs Lakh		170.62	170.56	170.62	170.79	171.09	171.51	172.07	172.77	173.62	174.61	175.77	177.09	178.58	180.25	182.11	167.94	172.97	178.22	183.68	189.38	204.35	210.54	217.00	223.72	230.73
Per unit Fixed Cost	Rs/kWh	2.87	2.76	2.76	2.76	2.77	2.77	2.78	2.79	2.80	2.81	2.83	2.85	2.87	2.89	2.92	2.95	2.72	2.80	2.89	2.98	3.07	3.31	3.41	3.52	3.63	3.74

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	8.28	5.28	5.54	5.82	6.11	6.42	6.74	7.08	7.43	7.80	8.19	8.60	9.03	9.48	9.96	10.46	10.98	11.53	12.10	12.71	13.34	14.01	14.71	15.45	16.22	17.03
O&M expn	Rs/kWh	1.09	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93
Depreciation	Rs/kWh	0.44	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	0.32	0.64	0.60	0.55	0.51	0.47	0.42	0.38	0.33	0.29	0.24	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.46	0.31	0.32	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.83	0.87	0.92
RoE	Rs/kWh	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
Total COG	Rs/kWh	11.15	8.05	8.31	8.59	8.88	9.19	9.52	9.86	10.23	10.62	11.02	11.45	11.90	12.38	12.88	13.41	13.70	14.33	14.99	15.69	16.41	17.32	18.12	18.96	19.85	20.77
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	5.28																										
Levllised Tariff (Fixed)	2.87																										
Levllised Tariff	8.15	Rs/Unit																									

Determination of Additional Depreciation for BIOMASS Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	652.00

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15

Tax Benefit Levillised 7.86

Electricity Generation (Levillised) 5.91

Levillised benefit	0.13	Rs/Unit
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Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC Boiler- Uttar Pradesh					Annexure-2.8H
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	12.00%
			Auxiliary Consumption after stabilization	%	12.00%
			PLF(Stabilization for 6 months)	%	80.00%
			PLF(during first year after Stabilization)	%	80.00%
			PLF(second year onwards)	%	80.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)		8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125.00
			During stabilization period	Kcal/kWh	4125.00
		Biomass	Base Price	Rs/T	3553.20
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	48.20
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Biomass Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		331.57	348.15	365.55	383.83	403.02	423.17	444.33	466.55	489.88	514.37	540.09	567.09	595.45	625.22	656.48	689.31	723.77	759.96	797.96	837.86	879.75	923.74	969.92	1,018.42	1,069.34
Per unit Variable Cost	Rs/kWh		5.37	5.64	5.92	6.22	6.53	6.86	7.20	7.56	7.94	8.33	8.75	9.19	9.65	10.13	10.64	11.17	11.73	12.31	12.93	13.58	14.26	14.97	15.72	16.50	17.33
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		48.20	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		39.71	36.97	34.23	31.49	28.75	26.01	23.28	20.54	17.80	15.06	12.32	9.58	6.85	4.11	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		19.38	20.22	21.11	22.04	23.02	24.05	25.13	26.26	27.46	28.71	30.03	31.41	32.86	34.39	35.99	37.46	39.27	41.16	43.15	45.23	47.54	49.83	52.24	54.77	57.42
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
Total Fixed Cost	Rs Lakh		170.90	170.85	170.92	171.11	171.42	171.87	172.44	173.16	174.02	175.04	176.22	177.56	179.08	180.77	182.66	184.51	186.57	188.85	191.35	194.08	197.05	200.28	203.78	207.55	211.60
Per unit Fixed Cost	Rs/kWh	2.87	2.77	2.77	2.77	2.77	2.78	2.78	2.79	2.81	2.82	2.84	2.86	2.88	2.90	2.93	2.96	2.97	2.99	3.01	3.04	3.07	3.10	3.13	3.16	3.19	3.22

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	8.43	5.37	5.64	5.92	6.22	6.53	6.86	7.20	7.56	7.94	8.33	8.75	9.19	9.65	10.13	10.64	11.17	11.73	12.31	12.93	13.58	14.26	14.97	15.72	16.50	17.33
O&M expn	Rs/kWh	1.09	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93
Depreciation	Rs/kWh	0.44	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	0.32	0.64	0.60	0.55	0.51	0.47	0.42	0.38	0.33	0.29	0.24	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.47	0.31	0.33	0.34	0.36	0.37	0.39	0.41	0.43	0.44	0.47	0.49	0.51	0.53	0.56	0.58	0.61	0.64	0.67	0.70	0.73	0.77	0.81	0.85	0.89	0.93
RoE	Rs/kWh	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
Total COG	Rs/kWh	11.30	8.14	8.41	8.69	8.99	9.31	9.64	9.99	10.37	10.76	11.17	11.61	12.07	12.55	13.06	13.60	13.90	14.54	15.21	15.92	16.66	17.58	18.39	19.25	20.14	21.08
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	5.37																										
Levllised Tariff (Fixed)	2.87																										
Levllised Tariff	8.25	Rs/Unit																									

Determination of Additional Depreciation for BIOMASS Projects

Depreciation amount	90%																										
Book Depreciation rate	5.28%																										
Tax Depreciation rate	40%																										
Additional Depreciation	20%																										
Income Tax (MAT)	17.472%																										
Income Tax (Normal Rates)	34.944%																										
Capital Cost	652.00																										
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Accelerated Depreciation																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Deprn.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15	
Tax Benefit Levelised	7.86																										
Electricity Generation (Levellised)	5.91																										
Levellised benefit	0.13	Rs/Unit																									

Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC Boiler- Other States					Annexure-2.8I
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	12.00%
			Auxiliary Consumption after stabilization	%	12.00%
			PLF(Stabilization for 6 months)	%	80.00%
			PLF(during first year after Stabilization)	%	80.00%
			PLF(second year onwards)	%	80.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125.00
			During stabilization period	Kcal/kWh	4125.00
		Biomass	Base Price	Rs/T	3734.85
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	48.20
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Biomass Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		348.52	365.95	384.24	403.45	423.63	444.81	467.05	490.40	514.92	540.67	567.70	596.09	625.89	657.19	690.04	724.55	760.77	798.81	838.75	880.69	924.73	970.96	1,019.51	1,070.49	1,124.01
Per unit Variable Cost	Rs/kWh		5.65	5.93	6.23	6.54	6.86	7.21	7.57	7.95	8.34	8.76	9.20	9.66	10.14	10.65	11.18	11.74	12.33	12.94	13.59	14.27	14.98	15.73	16.52	17.35	18.21
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		48.20	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		39.71	36.97	34.23	31.49	28.75	26.01	23.28	20.54	17.80	15.06	12.32	9.58	6.85	4.11	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		20.21	21.09	22.02	23.00	24.02	25.10	26.24	27.43	28.68	29.99	31.37	32.82	34.35	35.95	37.63	39.18	41.07	43.06	45.14	47.32	49.73	52.14	54.66	57.31	60.09
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
Total Fixed Cost	Rs Lakh		171.72	171.72	171.83	172.07	172.43	172.92	173.55	174.32	175.25	176.32	177.56	178.98	180.56	182.33	184.30	170.23	175.38	180.75	186.34	192.17	207.28	213.62	220.22	227.11	234.29
Per unit Fixed Cost	Rs/kWh	2.89	2.78	2.78	2.78	2.79	2.79	2.80	2.81	2.82	2.84	2.86	2.88	2.90	2.93	2.95	2.99	2.76	2.84	2.93	3.02	3.11	3.36	3.46	3.57	3.68	3.80

Levelised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	8.86	5.65	5.93	6.23	6.54	6.86	7.21	7.57	7.95	8.34	8.76	9.20	9.66	10.14	10.65	11.18	11.74	12.33	12.94	13.59	14.27	14.98	15.73	16.52	17.35	18.21
O&M expn	Rs/kWh	1.09	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93
Depreciation	Rs/kWh	0.44	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	0.32	0.64	0.60	0.55	0.51	0.47	0.42	0.38	0.33	0.29	0.24	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.49	0.33	0.34	0.36	0.37	0.39	0.41	0.43	0.44	0.46	0.49	0.51	0.53	0.56	0.58	0.61	0.63	0.67	0.70	0.73	0.77	0.81	0.84	0.89	0.93	0.97
RoE	Rs/kWh	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
Total COG	Rs/kWh	11.75	8.43	8.71	9.01	9.33	9.66	10.01	10.38	10.77	11.18	11.62	12.08	12.56	13.07	13.60	14.17	14.50	15.17	15.87	16.61	17.38	18.34	19.20	20.09	21.03	22.01
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost		5.65																									
Levilled Tariff (Fixed)		2.89																									
Levilled Tariff	8.54	Rs/Unit																									

Determination of Additional Depreciation for BIOMASS Projects

Depreciation amount	90%																									
Book Depreciation rate	5.28%																									
Tax Depreciation rate	40%																									
Additional Depreciation	20%																									
Income Tax (MAT)	17.472%																									
Income Tax (Normal Rates)	34.944%																									
Capital Cost	652.00																									
Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15
Tax Benefit Levellised	7.86																									
Electricity Generation (Levellised)	5.91																									
Levillised benefit	0.13	Rs/Unit																								

Non Fossil Fuel based Co-Generation Projects- Andhra Pradesh					Annexure-3A
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	8.50%
			Auxiliary Consumption after stabilization	%	8.50%
			PLF(Stabilization for 6 months)	%	45.00%
			PLF(during first year after Stabilization)	%	45.00%
			PLF(second year onwards)	%	45.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
		Debt Component	Total Equity Amount	Rs Lakh	140.10
			Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
04	Fuel Related Assumptions	Heat Rate	Interest On Working Capital	%	10.50%
		Bagasse	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
			Base Price	Rs/T	1971.90
05	Operation & Maintenance		GCV-Bagasse	Kcal/kg	2250
			Biomass Price Escalation Factor	%	5.00%
06	Generation & Sale of Energy		O&M Expenses	Rs Lakh	25.46
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Cogeneration Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		124.46	130.68	137.21	144.07	151.28	158.84	166.78	175.12	183.88	193.07	202.73	212.86	223.51	234.68	246.42	258.74	271.67	285.26	299.52	314.50	330.22	346.73	364.07	382.27	401.39
Per unit Variable Cost	Rs/kWh		3.45	3.62	3.80	3.99	4.19	4.40	4.62	4.85	5.09	5.35	5.62	5.90	6.19	6.50	6.83	7.17	7.53	7.90	8.30	8.71	9.15	9.61	10.09	10.59	11.12
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		25.46	26.44	27.45	28.51	29.60	30.74	31.92	33.15	34.42	35.74	37.11	38.54	40.02	41.56	43.15	44.81	46.53	48.32	50.17	52.10	54.10	56.18	58.33	60.57	62.90
Depreciation	Rs Lakh		21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34
Interest on term loan	Rs Lakh		28.44	26.48	24.52	22.56	20.59	18.63	16.67	14.71	12.75	10.79	8.83	6.86	4.90	2.94	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		8.02	8.34	8.67	9.02	9.39	9.77	10.18	10.61	11.05	11.53	12.02	12.55	13.10	13.67	14.28	14.77	15.46	16.19	16.96	17.76	18.69	19.58	20.50	21.48	22.50
Return on Equity	Rs Lakh		23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	30.15	30.15	30.15	30.15	30.15
Total Fixed Cost	Rs Lakh		107.49	106.82	106.20	105.64	105.14	104.71	104.33	104.02	103.78	103.62	103.52	103.51	103.58	103.73	103.97	92.68	95.10	97.61	100.24	102.97	112.28	115.24	118.32	121.54	124.88
Per unit Fixed Cost	Rs/kWh		2.98	2.96	2.94	2.93	2.91	2.90	2.89	2.88	2.88	2.87	2.87	2.87	2.87	2.87	2.88	2.57	2.63	2.70	2.78	2.85	3.11	3.19	3.28	3.37	3.46

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	5.41	3.45	3.62	3.80	3.99	4.19	4.40	4.62	4.85	5.09	5.35	5.62	5.90	6.19	6.50	6.83	7.17	7.53	7.90	8.30	8.71	9.15	9.61	10.09	10.59	11.12
O&M expn	Rs/kWh	0.99	0.71	0.73	0.76	0.79	0.82	0.85	0.88	0.92	0.95	0.99	1.03	1.07	1.11	1.15	1.20	1.24	1.29	1.34	1.39	1.44	1.50	1.56	1.62	1.68	1.74
Depreciation	Rs/kWh	0.54	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Int. on term loan	Rs/kWh	0.39	0.79	0.73	0.68	0.62	0.57	0.52	0.46	0.41	0.35	0.30	0.24	0.19	0.14	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.32	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.57	0.60	0.62
RoE	Rs/kWh	0.67	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.84	0.84	0.84	0.84	0.84
Total COG	Rs/kWh	8.32	6.43	6.58	6.74	6.92	7.10	7.30	7.51	7.73	7.97	8.22	8.48	8.77	9.06	9.38	9.71	9.74	10.16	10.61	11.08	11.57	12.26	12.80	13.36	13.96	14.58
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	3.45																										
Levllised Tariff (Fixed)	2.91																										
Levllised Tariff	6.36	Rs/Unit																									

Determination of Additional Depreciation

Depreciation amount	90%																									
Book Depreciation rate	5.28%																									
Tax Depreciation rate	40%																									
Additional Depreciation	20%																									
Income Tax (MAT)	17.47%																									
Income Tax (Normal Rates)	34.94%																									
Capital Cost	467.00																									
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depn.	Rs Lakh	140.10	163.45	65.38	39.23	23.54	14.12	8.47	5.08	3.05	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	127.77	138.79	40.72	14.57	- 1.12	- 10.54	- 16.18	- 19.57	- 21.61	- 22.83	- 23.56	- 24.00	- 24.26	- 24.42	- 24.52	- 24.57	- 24.61	- 13.42	0.02	0.01	0.01	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	44.65	48.50	14.23	5.09	- 0.39	- 3.68	- 5.66	- 6.84	- 7.55	- 7.98	- 8.23	- 8.39	- 8.48	- 8.53	- 8.57	- 8.59	- 8.60	- 4.69	0.01	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	1.80	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	
Per unit benefit	Rs/Unit	2.47	1.34	0.39	0.14	- 0.01	- 0.10	- 0.16	- 0.19	- 0.21	- 0.22	- 0.23	- 0.23	- 0.23	- 0.24	- 0.24	- 0.24	- 0.24	- 0.13	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	
Tax Benefit Levellised	5.63	Rs/Unit																								
Electricity Generation (Levellised)	3.46	Rs/Unit																								
Levellised benefit	0.16	Rs/Unit																								

Non Fossil Fuel based Co-Generation Projects- Haryana					Annexure-3B
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	8.50%
			Auxiliary Consumption after stabilization	%	8.50%
			PLF(Stabilization for 6 months)	%	53.00%
			PLF(during first year after Stabilization)	%	53.00%
			PLF(second year onwards)	%	53.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
		Debt Component	Total Equity Amount	Rs Lakh	140.10
			Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
04	Fuel Related Assumptions	Heat Rate	Interest On Working Capital	%	10.50%
		Bagasse	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
			Base Price	Rs/T	2804.55
05	Operation & Maintenance		GCV-Bagasse	Kcal/kg	2250
			Biomass Price Escalation Factor	%	5.00%
06	Generation & Sale of Energy		O&M Expenses	Rs Lakh	25.46
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Cogeneration Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		208.48	218.90	229.85	241.34	253.41	266.08	279.38	293.35	308.02	323.42	339.59	356.57	374.40	393.12	412.77	433.41	455.08	477.84	501.73	526.81	553.15	580.81	609.85	640.35	672.36
Per unit Variable Cost	Rs/kWh		4.90	5.15	5.41	5.68	5.96	6.26	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25	9.71	10.20	10.71	11.24	11.80	12.39	13.01	13.66	14.35	15.06	15.82
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		25.46	26.44	27.45	28.51	29.60	30.74	31.92	33.15	34.42	35.74	37.11	38.54	40.02	41.56	43.15	44.81	46.53	48.32	50.17	52.10	54.10	56.18	58.33	60.57	62.90
Depreciation	Rs Lakh		21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79
Interest on term loan	Rs Lakh		28.44	26.48	24.52	22.56	20.59	18.63	16.67	14.71	12.75	10.79	8.83	6.86	4.90	2.94	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		12.12	12.64	13.19	13.76	14.37	15.00	15.67	16.37	17.11	17.88	18.70	19.55	20.45	21.40	22.39	23.28	24.41	25.58	26.82	28.12	29.56	30.99	32.49	34.06	35.71
Return on Equity	Rs Lakh		23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77
Total Fixed Cost	Rs Lakh		111.58	111.12	110.72	110.39	110.12	109.93	109.82	109.79	109.84	109.97	110.20	110.52	110.94	111.46	112.08	101.20	104.04	107.01	110.10	113.32	123.15	126.65	130.31	134.12	138.10
Per unit Fixed Cost	Rs/kWh		2.62	2.61	2.60	2.60	2.59	2.59	2.58	2.58	2.58	2.59	2.59	2.60	2.61	2.62	2.64	2.38	2.45	2.52	2.59	2.67	2.90	2.98	3.07	3.16	3.25

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	7.69	4.90	5.15	5.41	5.68	5.96	6.26	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25	9.71	10.20	10.71	11.24	11.80	12.39	13.01	13.66	14.35	15.06	15.82
O&M expn	Rs/kWh	0.84	0.60	0.62	0.65	0.67	0.70	0.72	0.75	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.05	1.09	1.14	1.18	1.23	1.27	1.32	1.37	1.42	1.48
Depreciation	Rs/kWh	0.46	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	
Int. on term loan	Rs/kWh	0.33	0.67	0.62	0.58	0.53	0.48	0.44	0.39	0.35	0.30	0.25	0.21	0.16	0.12	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital	Rs/kWh	0.43	0.29	0.30	0.31	0.32	0.34	0.35	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.57	0.60	0.63	0.66	0.70	0.73	0.76	0.80	0.84
RoE	Rs/kWh	0.57	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.71	0.71	0.71	0.71	0.71
Total COG	Rs/kWh	10.32	7.53	7.76	8.01	8.27	8.55	8.85	9.16	9.48	9.83	10.19	10.58	10.99	11.42	11.87	12.35	12.58	13.15	13.76	14.39	15.06	15.91	16.64	17.41	18.22	19.06
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	4.90																										
Levllised Tariff (Fixed)	2.63																										
Levllised Tariff	7.53	Rs/Unit																									

Determination of Additional Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	467.00

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	140.10	163.45	65.38	39.23	23.54	14.12	8.47	5.08	3.05	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	127.77	138.79	40.72	14.57	- 1.12	- 10.54	- 16.18	- 19.57	- 21.61	- 22.83	- 23.56	- 24.00	- 24.26	- 24.42	- 24.52	- 24.57	- 24.61	- 13.42	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	44.65	48.50	14.23	5.09	- 0.39	- 3.68	- 5.66	- 6.84	- 7.55	- 7.98	- 8.23	- 8.39	- 8.48	- 8.53	- 8.57	- 8.59	- 8.60	- 4.69	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	2.13	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Per unit benefit	Rs/Unit	2.10	1.14	0.33	0.12	- 0.01	- 0.09	- 0.13	- 0.16	- 0.18	- 0.19	- 0.19	- 0.20	- 0.20	- 0.20	- 0.20	- 0.20	- 0.20	- 0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15
Tax Benefit Levellised	5.63	Rs/Unit																								
Electricity Generation (Levllised)	4.07	Rs/Unit																								
Levllised benefit	0.14	Rs/Unit																								

Non Fossil Fuel based Co-Generation Projects- Maharashtra					Annexure-3C
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	8.50%
			Auxiliary Consumption after stabilization	%	8.50%
			PLF(Stabilization for 6 months)	%	60.00%
			PLF(during first year after Stabilization)	%	60.00%
			PLF(second year onwards)	%	60.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
		Debt Component	Total Equity Amount	Rs Lakh	140.10
			Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2763.60
			GCV-Bagasse	Kcal/kg	2250
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	25.46
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Cogeneration Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		232.57	244.20	256.40	269.23	282.69	296.82	311.66	327.24	343.61	360.79	378.83	397.77	417.66	438.54	460.47	483.49	507.66	533.05	559.70	587.68	617.07	647.92	680.32	714.33	750.05
Per unit Variable Cost	Rs/kWh		4.83	5.07	5.33	5.59	5.87	6.17	6.48	6.80	7.14	7.50	7.87	8.27	8.68	9.11	9.57	10.05	10.55	11.08	11.63	12.21	12.82	13.46	14.14	14.84	15.59
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		25.46	26.44	27.45	28.51	29.60	30.74	31.92	33.15	34.42	35.74	37.11	38.54	40.02	41.56	43.15	44.81	46.53	48.32	50.17	52.10	54.10	56.18	58.33	60.57	62.90
Depreciation	Rs Lakh		21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79
Interest on term loan	Rs Lakh		28.44	26.48	24.52	22.56	20.59	18.63	16.67	14.71	12.75	10.79	8.83	6.86	4.90	2.94	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		13.30	13.87	14.48	15.12	15.79	16.50	17.24	18.02	18.84	19.71	20.61	21.56	22.56	23.61	24.72	25.73	26.97	28.28	29.65	31.09	32.68	34.26	35.92	37.67	39.50
Return on Equity	Rs Lakh		23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77
Total Fixed Cost	Rs Lakh		112.76	112.35	112.01	111.75	111.55	111.43	111.40	111.44	111.57	111.79	112.11	112.53	113.05	113.67	114.41	103.64	106.61	109.70	112.92	116.29	126.27	129.93	133.75	137.73	141.89
Per unit Fixed Cost	Rs/kWh		2.34	2.33	2.33	2.32	2.32	2.32	2.31	2.32	2.32	2.32	2.33	2.34	2.35	2.36	2.38	2.15	2.22	2.28	2.35	2.42	2.62	2.70	2.78	2.86	2.95

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	7.58	4.83	5.07	5.33	5.59	5.87	6.17	6.48	6.80	7.14	7.50	7.87	8.27	8.68	9.11	9.57	10.05	10.55	11.08	11.63	12.21	12.82	13.46	14.14	14.84	15.59
O&M expn	Rs/kWh	0.74	0.53	0.55	0.57	0.59	0.62	0.64	0.66	0.69	0.72	0.74	0.77	0.80	0.83	0.86	0.90	0.93	0.97	1.00	1.04	1.08	1.12	1.17	1.21	1.26	1.31
Depreciation	Rs/kWh	0.40	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	0.29	0.59	0.55	0.51	0.47	0.43	0.39	0.35	0.31	0.26	0.22	0.18	0.14	0.10	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.41	0.28	0.29	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.56	0.59	0.62	0.65	0.68	0.71	0.75	0.78	0.82
RoE	Rs/kWh	0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63
Total COG	Rs/kWh	9.94	7.18	7.41	7.66	7.92	8.19	8.48	8.79	9.12	9.46	9.82	10.20	10.60	11.03	11.47	11.95	12.20	12.76	13.36	13.98	14.63	15.45	16.16	16.92	17.71	18.53
Discount Factor				1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16
Variable Cost		4.83																									
Levllised Tariff (Fixed)		2.36																									
Levllised Tariff	7.19	Rs/Unit																									

Determination of Additional Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	467.00

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Accelerated Depreciation																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	140.10	163.45	65.38	39.23	23.54	14.12	8.47	5.08	3.05	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	127.77	138.79	40.72	14.57	1.12	10.54	16.18	19.57	21.61	22.83	23.56	24.00	24.26	24.42	24.52	24.57	24.61	13.42	0.02	0.01	0.01	0.00	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	44.65	48.50	14.23	5.09	0.39	3.68	5.66	6.84	7.55	7.98	8.23	8.39	8.48	8.53	8.57	8.59	8.60	4.69	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	2.41	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	0.01	0.08	0.12	0.14	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.18	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15	
Tax Benefit Levellised	5.63	Rs/Unit																									
Electricity Generation (Levellised)	4.61	Rs/Unit																									
Levellised benefit	0.12	Rs/Unit																									

Non Fossil Fuel based Co-Generation Projects- Punjab					Annexure-3D
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	8.50%
			Auxiliary Consumption after stabilization	%	8.50%
			PLF(Stabilization for 6 months)	%	53.00%
			PLF(during first year after Stabilization)	%	53.00%
			PLF(second year onwards)	%	53.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
		Debt Component	Total Equity Amount	Rs Lakh	140.10
			Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2468.55
			GCV-Bagasse	Kcal/kg	2250
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	25.46
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Cogeneration Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Variable Cost	Rs.	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		183.50	192.68	202.31	212.43	223.05	234.20	245.91	258.20	271.12	284.67	298.90	313.85	329.54	346.02	363.32	381.49	400.56	420.59	441.62	463.70	486.88	511.23	536.79	563.63	591.81
Per unit Variable Cost	Rs/kWh		4.32	4.53	4.76	5.00	5.25	5.51	5.78	6.07	6.38	6.70	7.03	7.38	7.75	8.14	8.55	8.97	9.42	9.89	10.39	10.91	11.45	12.03	12.63	13.26	13.92
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		25.46	26.44	27.45	28.51	29.60	30.74	31.92	33.15	34.42	35.74	37.11	38.54	40.02	41.56	43.15	44.81	46.53	48.32	50.17	52.10	54.10	56.18	58.33	60.57	62.90
Depreciation	Rs Lakh		21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34
Interest on term loan	Rs Lakh		28.44	26.48	24.52	22.56	20.59	18.63	16.67	14.71	12.75	10.79	8.83	6.86	4.90	2.94	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		10.90	11.36	11.84	12.35	12.89	13.45	14.04	14.66	15.31	15.99	16.71	17.47	18.27	19.10	19.98	20.75	21.75	22.79	23.89	25.04	26.33	27.60	28.93	30.32	31.78
Return on Equity	Rs Lakh		23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	30.15	30.15	30.15	30.15	30.15
Total Fixed Cost	Rs Lakh		110.37	109.84	109.38	108.98	108.64	108.38	108.19	108.07	108.04	108.08	108.21	108.43	108.75	109.16	109.67	98.67	101.38	104.21	107.17	110.24	119.92	123.26	126.75	130.38	134.17
Per unit Fixed Cost	Rs/kWh		2.60	2.58	2.57	2.56	2.56	2.55	2.54	2.54	2.54	2.54	2.55	2.55	2.56	2.57	2.58	2.32	2.38	2.45	2.52	2.59	2.82	2.90	2.98	3.07	3.16

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	6.77	4.32	4.53	4.76	5.00	5.25	5.51	5.78	6.07	6.38	6.70	7.03	7.38	7.75	8.14	8.55	8.97	9.42	9.89	10.39	10.91	11.45	12.03	12.63	13.26	13.92
O&M expn	Rs/kWh	0.84	0.60	0.62	0.65	0.67	0.70	0.72	0.75	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.05	1.09	1.14	1.18	1.23	1.27	1.32	1.37	1.42	1.48
Depreciation	Rs/kWh	0.46	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Int. on term loan	Rs/kWh	0.33	0.67	0.62	0.58	0.53	0.48	0.44	0.39	0.35	0.30	0.25	0.21	0.16	0.12	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.38	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.65	0.68	0.71	0.75
RoE	Rs/kWh	0.57	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.71	0.71	0.71	0.71	0.71
Total COG	Rs/kWh	9.35	6.91	7.12	7.33	7.56	7.80	8.06	8.33	8.62	8.92	9.24	9.58	9.93	10.31	10.71	11.13	11.29	11.81	12.35	12.91	13.50	14.27	14.93	15.61	16.33	17.08
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	4.32																										
Levllised Tariff (Fixed)	2.58																										
Levllised Tariff	6.90	Rs/Unit																									

Determination of Additional Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	467.00

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	140.10	163.45	65.38	39.23	23.54	14.12	8.47	5.08	3.05	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	127.77	138.79	40.72	14.57	1.12	10.54	16.18	19.57	21.61	22.83	23.56	24.00	24.26	24.42	24.52	24.57	24.61	13.42	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	44.65	48.50	14.23	5.09	0.39	3.68	5.66	6.84	7.55	7.98	8.23	8.39	8.48	8.53	8.57	8.59	8.60	4.69	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	2.13	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Per unit benefit	Rs/Unit	2.10	1.14	0.33	0.12	0.01	0.09	0.13	0.16	0.18	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.15
Tax Benefit Levllised	5.63	Rs/Unit																								
Electricity Generation (Levllised)	4.07	Rs/Unit																								
Levllised benefit	0.14	Rs/Unit																								

Non Fossil Fuel based Co-Generation Projects- Tamil Nadu					Annexure-3E
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
01	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilization	%	8.50%
			Auxiliary Consumption after stabilization	%	8.50%
			PLF(Stabilization for 6 months)	%	60.00%
			PLF(during first year after Stabilization)	%	60.00%
			PLF(second year onwards)	%	60.00%
			Useful Life	Years	25
02	Sources of Fund	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
		Debt Component	Total Equity Amount	Rs Lakh	140.10
			Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	15
			Interest Rate	%	9.00%
		Equity Component	Equity amount	Rs Lakh	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate (equiv. to WACC)	%	8.30%
03	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate(Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
		For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
			Interest On Working Capital	%	10.50%
04	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2124.15
			GCV-Bagasse	Kcal/kg	2250
			Biomass Price Escalation Factor	%	5.00%
05	Operation & Maintenance		O&M Expenses	Rs Lakh	25.46
			O & M Expenses Escalation	%	3.84%
06	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00

CERC RE Tariff Order FY 2020-21

Cogeneration Projects : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Biomass Cost	Rs. Lakh		178.75	187.69	197.08	206.93	217.28	228.14	239.55	251.53	264.10	277.31	291.17	305.73	321.02	337.07	353.92	371.62	390.20	409.71	430.19	451.70	474.29	498.00	522.90	549.05	576.50
Per unit Variable Cost	Rs/kWh		3.71	3.90	4.10	4.30	4.51	4.74	4.98	5.23	5.49	5.76	6.05	6.35	6.67	7.00	7.35	7.72	8.11	8.51	8.94	9.39	9.86	10.35	10.87	11.41	11.98
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		25.46	26.44	27.45	28.51	29.60	30.74	31.92	33.15	34.42	35.74	37.11	38.54	40.02	41.56	43.15	44.81	46.53	48.32	50.17	52.10	54.10	56.18	58.33	60.57	62.90
Depreciation	Rs Lakh		21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79
Interest on term loan	Rs Lakh		28.44	26.48	24.52	22.56	20.59	18.63	16.67	14.71	12.75	10.79	8.83	6.86	4.90	2.94	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		10.67	11.12	11.59	12.08	12.60	13.15	13.73	14.33	14.97	15.63	16.34	17.08	17.85	18.67	19.52	20.27	21.24	22.26	23.33	24.45	25.72	26.95	28.25	29.61	31.04
Return on Equity	Rs Lakh		23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77
Total Fixed Cost	Rs Lakh		110.13	109.60	109.12	108.71	108.36	108.08	107.88	107.75	107.69	107.72	107.84	108.04	108.33	108.72	109.21	98.19	100.88	103.68	106.61	109.66	119.30	122.62	126.07	129.67	133.42
Per unit Fixed Cost	Rs/kWh		2.29	2.28	2.27	2.26	2.25	2.25	2.24	2.24	2.24	2.24	2.24	2.24	2.25	2.26	2.27	2.04	2.10	2.15	2.22	2.28	2.48	2.55	2.62	2.69	2.77

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per unit Variable Cost	Rs/kWh	5.83	3.71	3.90	4.10	4.30	4.51	4.74	4.98	5.23	5.49	5.76	6.05	6.35	6.67	7.00	7.35	7.72	8.11	8.51	8.94	9.39	9.86	10.35	10.87	11.41	11.98
O&M expn	Rs/kWh	0.74	0.53	0.55	0.57	0.59	0.62	0.64	0.66	0.69	0.72	0.74	0.77	0.80	0.83	0.86	0.90	0.93	0.97	1.00	1.04	1.08	1.12	1.17	1.21	1.26	1.31
Depreciation	Rs/kWh	0.40	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	0.29	0.59	0.55	0.51	0.47	0.43	0.39	0.35	0.31	0.26	0.22	0.18	0.14	0.10	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.33	0.22	0.23	0.24	0.25	0.26	0.27	0.29	0.30	0.31	0.32	0.34	0.35	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.51	0.53	0.56	0.59	0.62	0.64
RoE	Rs/kWh	0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63	0.63	0.63
Total COG	Rs/kWh	8.10	6.00	6.18	6.36	6.56	6.77	6.99	7.22	7.47	7.73	8.00	8.29	8.60	8.92	9.26	9.62	9.76	10.20	10.67	11.15	11.66	12.33	12.90	13.49	14.10	14.75
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost	3.71																										
Levllised Tariff (Fixed)	2.27																										
Levllised Tariff	5.99	Rs/Unit																									

Determination of Additional Depreciation

Depreciation amount		90%																								
Book Depreciation rate		5.28%																								
Tax Depreciation rate		40%																								
Additional Depreciation		20%																								
Income Tax (MAT)		17.47%																								
Income Tax (Normal Rates)		34.94%																								
Capital Cost		467.00																								
Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Deprn.	Rs Lakh	140.10	163.45	65.38	39.23	23.54	14.12	8.47	5.08	3.05	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	127.77	138.79	40.72	14.57	1.12	10.54	16.18	19.57	21.61	22.83	23.56	24.00	24.26	24.42	24.52	24.57	24.61	13.42	0.02	0.01	0.01	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	44.65	48.50	14.23	5.09	0.39	3.68	5.66	6.84	7.55	7.98	8.23	8.39	8.48	8.53	8.57	8.59	8.60	4.69	0.01	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	2.41	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	0.01	0.08	0.12	0.14	0.16	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.18	0.10	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.42	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.20	0.18	0.17	
Tax Benefit Levellised	5.63	Rs/Unit																								
Electricity Generation (Levillised)	4.61	Rs/Unit																								
Levillised benefit	0.12	Rs/Unit																								