

2.1 Form Template for Biomass Power Projects

Uttar Pradesh

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF (Stabilization for 6 months)	%	60%
			PLF (during first year after Stabilization)	%	70%
			PLF (second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	450
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	315
			Total Equity Amount	Rs Lacs	135
		Debt Component	Loan Amount	Rs Lacs	315
			Moratorium Period	years	0
			Repayment Period (incl. Moratorium)	years	10
			Interest Rate	%	14.29%
		Equity Component	Equity amount	Rs Lacs	135
			Return on Equity for first 10 years	% p.a	19.00%
			RoE Period	Year	10.00
Return on Equity after 10 years	%		24.00%		
Weighted average of ROE	%		21.50%		
Discount Rate (equiv. to WACC)	%	16.45%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
			MAT Rate (for first 10 years)	%	16.995%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate (power plant)	%	7.00%
			Depreciation Rate 11th year onwards	%	2.00%
Years for 7% depreciation rate	%	10.00			
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		Receivables for Debtors	Months	2	
		For Variable Charges	Biomass Stock	Months	4
		Interest On Working Capital		%	13.79%
6	Fuel Related Assumptions	Heat Rate	After Stabilisation period	Kcal/kwh	3800
			During Stabilization Period	Kcal/kwh	3800
		Biomass	Base Price (FY09-10)	Rs/T	1518
			GCV - Biomass	Kcal/kg	3371
Biomass Price Escalation Factor	%	5%			
7	Operation & Maintenance	power plant		Rs Lakh	20.25
		Total O & M Expenses Escalation		%	5.72%
8	Generation and Sale Of Energy	Working Hours/Day		Hrs	24
		No. of Days		Days	365
		Total No. of Hours		Hrs	8760

2.2 Form Template for (Biomass Power Projects- Uttar Pradesh) : 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
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		5.89	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31

Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Biomass Cost	Rs Lakh		97.43	125.92	132.21	138.82	145.76	153.05	160.70	168.74	177.18	186.03	195.34	205.10	215.36	226.13	237.43	249.30	261.77	274.86	288.60	303.03

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		20.25	21.41	22.63	23.93	25.30	26.74	28.27	29.89	31.60	33.41	35.32	37.34	39.47	41.73	44.12	46.64	49.31	52.13	55.11	58.27
Depreciation	Rs Lakh		31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50
Interest on term loan	Rs Lakh		42.76	38.26	33.76	29.26	24.76	20.26	15.75	11.25	6.75	2.25	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		10.37	12.34	12.75	13.18	13.64	14.13	14.65	15.20	15.79	16.41	16.75	17.56	18.40	19.29	20.22	21.20	22.23	23.31	24.45	25.65
Return on Equity	Rs Lakh		25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65	25.65
Total Fixed Cost	Rs Lakh		130.53	129.16	128.29	123.92	120.84	118.28	115.83	113.50	111.29	109.22	93.47	96.29	99.27	102.42	105.74	109.24	112.94	116.84	120.97	125.31

Levatised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/KWh		1.90	2.00	2.10	2.20	2.31	2.43	2.55	2.68	2.81	2.95	3.10	3.25	3.41	3.59	3.76	3.95	4.15	4.36	4.58	4.80
O&M expn	Rs/KWh		0.40	0.34	0.36	0.38	0.40	0.42	0.45	0.47	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.87	0.92
Depreciation	Rs/KWh		0.61	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Int. on term loan	Rs/KWh		0.83	0.61	0.54	0.46	0.39	0.32	0.25	0.18	0.11	0.04	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		0.20	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.31	0.32	0.34	0.35	0.37	0.39	0.41
RoE	Rs/KWh		0.50	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/KWh		4.45	4.04	4.10	4.16	4.23	4.30	4.38	4.47	4.57	4.68	4.58	4.76	4.99	5.21	5.44	5.68	5.94	6.21	6.49	6.79

Levatised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.850	0.737	0.633	0.544	0.467	0.401	0.344	0.296	0.254	0.218	0.187	0.161	0.138	0.119	0.102	0.087	0.073	0.064	0.055
Variable Cost			128.4	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1	158.1
Fixed Cost			100.6	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9

Levatised Tariff (Variable)	2.51
Levatised Tariff (Fixed)	1.89
Levatised Tariff	4.40 Rs/Unit

Determination of Accelerated Depreciation for Biomass Power Projects- Uttar Pradesh

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	450.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	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%	5.28%	5.28%	0.24%	0.00%	0.00%
Book Depreciation	Rs Lakh	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	23.76	1.08	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	180.00	216.00	43.20	8.64	1.73	0.35	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	156.24	192.24	19.44	-15.12	-22.03	-23.41	-23.69	-23.75	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	-1.08	0.00	0.00	
Tax Benefit	Rs Lakh	26.55	32.67	3.30	-2.57	-3.74	-3.98	-4.03	-4.04	-4.04	-4.04	-8.08	-8.08	-8.08	-8.08	-8.08	-8.08	-8.08	-8.08	-8.08	-0.37	0.00	0.00
Net Energy generation	MU	5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	0.52	0.52	0.05	-0.04	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.01	0.00	0.00
Discounting Factor		1.00	0.86	0.74	0.63	0.54	0.47	0.40	0.34	0.30	0.25	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08	0.06	0.06	0.06

Levelised Benefit **0.10** **Rs/ Unit**