

CALCULATION OF BASELINE EMISSION FACTORS AND EMISSION REDUCTIONS OF RICE HUSK BASED POWER PROJECT: WL						
Scenario 1: Baseline calculations using Combined Margin Approach						
Year of offer	2002-2003		2003-04		2004-05	
Installed capacity	BASE YEAR					
Generation Mix						
Sector	mU	%	mU	%	mU	%
Thermal Coal based(CSEB)	6859.22	61.16	6868.09	63.12	7142.16	60.04
Thermal Coal based(Central)	2855.93	25.47	2655.73	24.41	2266.40	19.05
CPP (coal)	410.89	3.66	434.24	3.99	767.05	6.45
Gas Based (Central)	267.57	2.39	199.18	1.83	182.78	1.54
Hydro (CSEB+ power from Interstate generating station)	276.48	2.47	298.93	2.75	645.38	5.43
Nuclear (Central)	290.00	2.59	147.00	1.35	169.15	1.42
Renewable/CPP Waste heat Power	255.36	2.28	180.03	1.65	211.09	1.77
Import from EREB (WBPDCL GRIDCO DVC)	0.00	70.98	0.65	387.40	3.26	
Import from NREB(Dalh Transco Limited)	0.00	27.87	0.25	0.00	0.00	
Import from NREB(GEB)	0.00	0.00	0.00	9.43	0.08	
Import from SREB/APTRANSCO	0.00	0.00	0.00	104.18	0.88	
Import from North Eastern REB(Tripura, Assam)	0.00	0.00	0.00	9.80	0.08	
Total generation	11214.45	100.00	10881.85	100.00	11894.82	100.00
Net generation excluding Hydro, Nuclear, CPP & RE plants	10392.61	92.67	10157.24	93.34	10358.39	87.08
% of generation by coal out of total gen.excl. Hydro, Nuclear, CPP & RE plants	10125.04	97.43	9958.06	98.04	10175.61	98.24
% of generation by gas out of total gen.excl. Hydro, Nuclear, CPP & RE plants	267.57	2.57	199.18	1.96	182.78	1.76
Estimation of Baseline Emission Factor (tCO2/MU)						
Simple Operating Margin						
Fuel 1: Coal						
Avg. efficiency of power generation with coal as a fuel, %	36.73		36.58		36.58	
Avg. calorific value of coal used, kcal/kg	4171.000		3820.000		3750.000	
Estimated coal consumption, tons/yr		5683470.667		6129420.544		6380243.145
Emission factor for Coal (PCC)(tonne CO2/tJ)	96.10		96.100	74.909	96.100	
Oxidation factor of coal ( PCC standard value)	0.98		0.980		0.980	
COEF of coal (tonneCO2/ton of coal)		1.642		1.503		1.476
Fuel 2: Gas						
Avg. efficiency of power generation with gas as a fuel, %	45.00		45.00		45.00	
Avg. calorific value of gas used, kcal/kg	10750		10750		10750	
Estimated gas consumption, tons/yr		47565.99		35408.283		32492.850
Emission factor for Gas (as per standard IPCC value)	56.10		56.100		56.100	
Oxidation factor of gas ( IPCC standard value)	0.995		0.995		0.995	
COEF of gas(tonneCO2/ton of gas)		2.508		2.508		2.508
EF (OM Simple, excluding imports from other grids), tCO2/MU		909.218		915.996		916.938
EF (EREB) tCO2/MU	1190.000		1190.000		1180.000	
EF (NREB) tCO2/MU	910.000		910.000		910.000	
EF (SREB) tCO2/MU	770.000		760.000		740.000	
EF (NREB) tCO2/MU	790.000		740.000		730.000	
EF (North Eastern REB) tCO2/MU	380.000		390.000		390.000	
EF (OM Simple), tCO2/MU		909.219		917.418		924.137
Average Simple OM						916.924
Built Margin Factor						
Considering 20% of Gross Generation					2378.964	
Sector	mU					
Thermal Coal based(CSEB)					0.000	
Thermal Coal based(Central)					591.830	
CPP (Coal)					767.049	
Gas Based (Central)					0.000	
Hydro (CSEB+ Interstate generating station)					520.340	
Nuclear (Central)					84.575	
NREB					9.430	
SREB					104.180	
EREB					387.400	
North Eastern REB					9.800	
Total generation					2474.604	
Net generation excluding Hydro, Nuclear, other grid & RE plants					1358.879	
% of generation by coal out of total gen.excl. Hydro, Nuclear, other grid & RE plants					1358.879	100.00
% of generation by gas out of total gen.excl. Hydro, Nuclear, other grid & RE plants					0.000	0.00
Built Margin						
Fuel 1: Coal						
Avg. efficiency of power generation with coal as a fuel, %					36.58	
Avg. calorific value of coal used in kcal/kg					3750.000	
Estimated coal consumption, tons/yr						852035.114
Emission factor for Coal (PCC)(tonne CO2/tJ)					96.100	
Oxidation factor of coal ( PCC standard value)					0.980	
COEF of coal (tonneCO2/ton of coal)						1.476
EF (excluding imports from other grids), tCO2/MU					925.401	
EF (EREB) tCO2/MU					1180.000	
EF (NREB) tCO2/MU					910.000	
EF (SREB) tCO2/MU					740.000	
EF (NREB) tCO2/MU					390.000	
EF (tCO2 / MU)					964.939	
Combined Margin Factor (Avg of OM & BM) tCO2 / MU					940.932	
Baseline Emissions Factor (kgCO2 / kWh)						0.941
On-Site Project Emission Reductions						
Net no. of units generated exclud aux, millions	45.410		45.410		45.410	
No. of units replaced in the grid, millions	45.410		45.410		45.410	
Emission factor considered, kg CO2/kWh	0.941		0.941		0.941	
Baseline Emissions (in tonnes of CO2)	42727.715		42727.715		42727.715	
Coal Consumption (in tonnes)	9785.000		9785.000		9785.000	
Carbon content in Coal (%)	40.000		40.000		40.000	
Project Emissions (in tonnes of CO2)	14351.333		14351.333		14351.333	
Carbon emission reductions in a year (in tonnes of CO2)	28376.381		28376.381		28376.381	
Commitment period	2002-2012					
No. of years of delivery of CERs	10					
Total number of CERs	283763.812					

Year	2002 - 2003	2003-04	2004-05	2005-06	2006-07	2007-08
Baseline emissions	42727.715	42727.715	42727.715	42727.715	42727.715	42727.715
Project emissions	14351.333	14351.333	14351.333	14351.333	14351.333	14351.333
Emission reductions	28376.381	28376.381	28376.381	28376.381	28376.381	28376.381

