

Table 4.3 – Projections of Renewable Electricity Carbon Dioxide Emissions Savings

(Million Metric Tons Carbon Equivalent per Year)

	Data Sources	Projections					
		<u>2006</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Renewable Energy							
Geothermal	AEO2006 - Reference Case	2.87	3.48	4.22	5.59	7.17	6.88
	AEO2006 - High Renewables		3.81		7.87		9.53
	EERE GPRA FY07		2.44	2.88	3.86	5.37	
Wind	AEO2006 - Reference Case	6.79	10.10	10.34	9.83	9.74	8.42
	AEO2006 - High Renewables		10.10		9.85		9.65
	EERE GPRA FY07		5.12	11.93	50.84	85.69	
Solar ¹	AEO2006 - Reference Case	0.23	0.47	0.50	0.51	0.56	0.75
	AEO2006 - High Renewables		0.47		0.51		0.82
	EERE GPRA FY07		0.77	2.36	10.37	23.18	
Hydroelectric	AEO2006 - Reference Case	56.43	59.86	55.75	49.77	46.49	39.60
	AEO2006 - High Renewables		59.86		49.65		39.75
	EERE GPRA FY07		60.30	56.10	49.96	46.68	
Biomass/Wood	AEO2006 - Reference Case	3.63	8.87	8.27	7.98	7.87	7.55
	AEO2006 - High Renewables		9.03		9.85		12.53
	EERE GPRA FY07		5.40	5.47	5.27	6.03	
MSW and LFG	AEO2006 - Reference Case	4.87	5.39	5.21	4.78	4.56	3.92
	AEO2006 - High Renewables		5.39		4.78		3.92
	EERE GPRA FY07 ²		5.50	5.13	4.68	4.39	
Total Renewable Energy	AEO2006 - Reference Case	80.36	94.49	90.67	84.65	82.69	73.00
	AEO2006 - High Renewables		95.27		89.54		83.39
	EERE GPRA FY07 ³		79.59	83.99	122.03	142.34	
Heat Rate	Btu/kWh	10,796	10,593	9,019	8,266	7,891	6,872
Carbon Coefficient	MMTCE/Tbtu	0.01783	0.01875	0.02048	0.01988	0.01944	0.01900

Sources: Generation data: EIA *Annual Energy Outlook 2006*, DOE/EIA-0383 (06) (Washington, D.C., February 2006), Tables A16 and F8. Renewable generation GPRA projections provided by OnLocation, February 2006. Heat Rate and Carbon Coefficient data based on GPRA 2003 Data Call. Carbon emission coefficients and heat rates for 2006-2025: U.S. Department of Energy, GPRA2003 Data Call, Appendix B, pages B-13 and B-16, (September 14, 2001). 2030 values are NREL estimates based on trend.

Notes:

Carbon emissions savings based on calculation: $(10^9 \text{ kWh}) * (\text{Btu/kWh}) * (\text{TBtu}/10^{12} \text{ Btu}) * (\text{MMTCE/TBtu})$

¹ Solar-thermal and photovoltaic energy.

² EERE does not have an R&D program for LFG/MSW, so they are not included in GPRA projections

³ Biomass, MSW, and LFG are not included in the portfolio value. The portfolio values do not equal the summed values of the individual programs, as the portfolio analysis accounts for program interactions and micro-price feedback effects.