

Table 4.1 – Projections of Renewable Electricity Net Capacity

(Gigawatts)

Renewable Energy	Data Sources	Projections					
		<u>2006</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Geothermal	AEO2006 - Reference Case	2.23	2.56	3.19	4.61	6.02	6.64
	AEO2006 - High Renewables		2.80		6.19		9.14
	EERE GPRA FY07		2.21	2.61	3.53	4.88	
Wind	AEO2006 - Reference Case	11.56	16.27	17.71	18.81	19.80	20.10
	AEO2006 - High Renewables		16.27		18.87		22.63
	EERE GPRA FY07		8.91	18.98	77.66	135.85	
Solar ¹	AEO2006 - Reference Case	0.67	1.17	1.31	1.47	1.71	2.62
	AEO2006 - High Renewables		1.17		1.47		2.87
	EERE GPRA FY07		1.97	6.27	31.16	68.86	
Hydroelectric	AEO2006 - Reference Case	78.31	78.32	78.37	78.53	78.53	78.53
	AEO2006 - High Renewables		78.33		78.41		78.76
	EERE GPRA FY07		79.21	79.21	79.21	79.21	
Biomass/Wood (excludes cogen)	AEO2006 - Reference Case	2.09	2.15	2.15	2.46	3.45	4.63
	AEO2006 - High Renewables		2.20		3.96		10.55
	EERE GPRA FY07		1.83	2.01	2.62	4.57	
MSW and LFG	AEO2006 - Reference Case	3.55	3.78	3.92	4.02	4.11	4.14
	AEO2006 - High Renewables		3.79		4.03		4.14
	EERE GPRA FY07 ²		3.83	3.84	3.92	3.93	
Total Renewable Energy	AEO2006 - Reference Case	102.92	109.26	112.12	115.93	120.21	123.95
	AEO2006 - High Renewables		109.82		119.81		137.09
	EERE GPRA FY07 ³		98.54	115.53	196.25	225.38	

Sources: EIA *Annual Energy Outlook 2006*, DOE/EIA-0383 (2006) (Washington, D.C., February 2006), Tables A16 and D7. Total Renewable Capacity GPRA projections provided by OnLocation, February 2006.

Notes: OnLocation GPRA07 benefits estimates do not estimate any programmatic influence on biomass power, because the Biomass Program has been redirected away from biomass power to integrated biorefinery technologies. "Total" represents portfolio case values, while individual program values represent each program case. The portfolio case accounts for program interactions and micro-price feedback effects. The GPRA FY07 modeling effort uses the NEMS model, which uses the EIA AEO 2005 as the baseline for its analysis.

¹ Solar-thermal and photovoltaic energy.

² EERE does not have an R&D program for biomass, 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. Total includes biomass combined heat and power and on-site electricity-only plants for industrial and commercial sectors not detailed above.

Table 4.2 – Projections of Renewable Electricity Net Generation

(Billion Kilowatthours)

Renewable Energy	Data Sources	Projections					
		<u>2006</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Geothermal	AEO2006 - Reference Case	14.91	17.51	22.84	34.01	46.74	52.70
	AEO2006 - High Renewables		19.16		47.91		73.01
	EERE GPRA FY07		12.30	15.60	23.50	35.00	
Wind	AEO2006 - Reference Case	35.25	50.87	55.98	59.82	63.48	64.51
	AEO2006 - High Renewables		50.87		59.97		73.90
	EERE GPRA FY07		25.80	64.60	309.40	558.60	
Solar ¹	AEO2006 - Reference Case	1.19	2.35	2.69	3.10	3.68	5.71
	AEO2006 - High Renewables		2.36		3.10		6.25
	EERE GPRA FY07		3.90	12.80	63.10	151.10	
Hydroelectric	AEO2006 - Reference Case	293.13	301.40	301.82	302.87	303.06	303.27
	AEO2006 - High Renewables		301.40		302.15		304.46
	EERE GPRA FY07		303.60	303.70	304.00	304.30	
Biomass/Wood (without cogeneration)	AEO2006 - Reference Case	18.87	44.67	44.80	48.59	51.30	57.83
	AEO2006 - High Renewables		45.45		59.94		95.96
	EERE GPRA FY07		27.20	29.60	32.10	39.30	
MSW and LFG	AEO2006 - Reference Case	25.29	27.13	28.20	29.06	29.75	30.03
	AEO2006 - High Renewables		27.13		29.08		30.04
	EERE GPRA FY07 ²		27.70	27.80	28.50	28.60	
Total Renewable Energy	AEO2006 - Reference Case	417.45	475.75	490.86	515.15	539.06	559.14
	AEO2006 - High Renewables		479.65		544.91		638.67
	EERE GPRA FY07 ³		400.70	454.70	742.60	927.90	

Sources: EIA *Annual Energy Outlook 2006*, DOE/EIA-0383 (2006) (Washington, D.C., February 2006), Tables A16 and D7. Renewable generation GPRA projections provided by OnLocation, February 2006.

Notes: OnLocation GPRA07 benefits estimates do not estimate any programmatic influence on biomass power, because the Biomass Program has been redirected away from biomass power to integrated biorefinery technologies. "Total" represents portfolio case values, while individual program values represent each program case. The portfolio case accounts for program interactions and micro-price feedback effects. The GPRA FY07 modeling effort uses the NEMS model, which uses the EIA AEO 2005 as the baseline for its analysis.

¹ Solar-thermal and photovoltaic energy.

² EERE does not have an R&D program for biomass, 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.

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: $(10^9 \text{ kWh}) * (\text{Btu/kWh}) * (\text{TBtu}/10^{12} \text{ Btu}) * (\text{MMTCE}/\text{TBtu})$

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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.