

Table 16. Renewable Energy Generating Capacity and Generation
(gigawatts, unless otherwise noted)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Electric Power Sector 1/													
Net Summer Capacity													
Conventional Hydropower	79.96	79.97	79.97	79.98	79.99	79.99	79.99	79.99	79.99	79.99	79.99	79.99	80.12
Geothermal 2/	2.17	2.28	2.38	2.45	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.54	2.61
Municipal Waste 3/	3.19	3.23	3.41	3.43	3.43	3.43	3.43	3.43	3.43	3.63	3.76	3.79	3.79
Wood and Other Biomass 4/, 5/	2.04	2.06	2.15	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
Solar Thermal	0.40	0.40	0.40	0.53	0.54	0.54	0.54	0.55	0.55	0.55	0.56	0.56	0.56
Solar Photovoltaic 6/	0.03	0.03	0.03	0.04	0.05	0.06	0.07	0.09	0.10	0.11	0.12	0.14	0.15
Wind	6.97	9.62	12.24	16.42	16.61	16.80	16.97	17.11	17.26	17.41	17.56	17.70	17.73
Total	94.75	97.59	100.59	105.07	105.30	105.51	105.69	105.85	106.01	106.37	106.67	106.94	107.18
Generation (billion kilowatthours)													
Conventional Hydropower	265.06	261.89	279.78	277.72	284.50	290.97	297.50	302.73	302.76	302.78	302.81	302.83	303.75
Geothermal 2/	14.81	15.12	16.25	16.80	17.26	17.31	17.34	17.34	17.35	17.35	17.35	17.73	18.17
Municipal Waste 3/	19.86	20.56	20.79	21.52	21.56	21.56	21.56	21.56	21.56	23.06	24.12	24.38	24.38
Wood and Other Biomass 5/	9.73	9.92	16.41	26.26	31.18	40.55	43.29	43.37	42.24	42.46	43.25	46.22	46.22
Dedicated Plants	8.54	5.38	10.96	11.59	11.83	11.95	11.11	10.57	10.58	9.86	10.13	10.49	10.30
Cofiring	1.19	4.53	5.45	14.66	19.35	28.60	32.18	32.81	31.67	32.60	33.12	35.74	35.91
Solar Thermal	0.57	0.54	0.70	0.92	1.14	1.15	1.16	1.17	1.18	1.19	1.20	1.22	1.23
Solar Photovoltaic 6/	0.01	0.01	0.07	0.10	0.12	0.15	0.18	0.21	0.23	0.27	0.30	0.34	0.38
Wind	14.14	14.60	28.92	46.21	47.06	47.65	48.26	48.79	49.31	49.83	50.34	50.85	50.94
Total	324.19	322.64	362.93	389.54	402.82	419.34	429.28	435.16	434.62	436.94	439.38	443.57	445.05
End-Use Generators 7/													
Net Summer Capacity													
Conventional Hydropower 8/	0.65	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Geothermal	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
Municipal Waste 9/	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Biomass	4.66	4.49	4.59	4.68	4.70	4.72	4.79	4.90	5.04	5.17	5.28	5.38	5.50
Solar Photovoltaic 6/	0.12	0.18	0.23	0.31	0.40	0.50	0.63	0.65	0.66	0.67	0.68	0.69	0.70
Total	5.76	5.63	5.79	5.96	6.07	6.18	6.39	6.51	6.66	6.80	6.92	7.04	7.17
Generation (billion kilowatthours)													
Conventional Hydropower 8/	4.99	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
Geothermal	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
Municipal Waste 9/	2.64	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Biomass	28.90	27.91	28.52	29.05	29.18	29.29	29.69	30.35	31.16	31.90	32.55	33.15	33.84
Solar Photovoltaic 6/	0.23	0.33	0.45	0.61	0.77	0.95	1.21	1.24	1.26	1.28	1.31	1.33	1.35
Total	36.77	34.18	34.90	35.59	35.88	36.18	36.84	37.53	38.36	39.12	39.79	40.42	41.13

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(gigawatts, unless otherwise noted)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2005-2030
Electric Power Sector 1/															
Net Summer Capacity															
Conventional Hydropower	80.12	80.12	80.12	80.12	80.12	80.12	80.12	80.12	80.18	80.18	80.18	80.18	80.18	80.18	0.0%
Geothermal 2/	2.66	2.71	2.79	2.79	2.79	2.87	2.87	2.90	2.95	3.00	3.05	3.10	3.10	3.15	1.3%
Municipal Waste 3/	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.85	3.86	3.86	3.87	0.7%
Wood and Other Biomass 4/, 5/	2.22	2.22	2.28	2.37	2.37	2.55	2.59	2.73	2.89	2.94	3.07	3.26	3.31	3.80	2.5%
Solar Thermal	0.57	0.57	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.61	0.61	0.62	0.62	0.63	1.8%
Solar Photovoltaic 6/	0.17	0.18	0.20	0.22	0.24	0.25	0.27	0.29	0.31	0.32	0.34	0.36	0.38	0.39	10.6%
Wind	17.78	17.85	17.85	17.85	17.85	17.89	17.89	17.89	17.89	17.89	17.89	17.89	17.92	17.98	2.5%
Total	107.31	107.44	107.60	107.72	107.74	108.06	108.12	108.33	108.62	108.74	108.98	109.26	109.36	110.00	0.5%
Generation (billion kilowatthours)															
Conventional Hydropower	303.77	303.79	303.82	303.85	303.87	303.90	303.93	303.96	304.36	304.39	304.42	304.45	304.48	304.51	0.6%
Geothermal 2/	18.63	19.05	19.59	19.79	19.92	20.30	20.43	20.75	21.05	21.40	21.79	22.18	22.34	22.66	1.6%
Municipal Waste 3/	24.42	24.42	24.42	24.42	24.42	24.42	24.43	24.43	24.43	24.44	24.83	24.88	24.91	24.95	0.8%
Wood and Other Biomass 5/	50.07	50.34	49.45	47.47	46.69	49.19	52.30	56.96	58.01	58.88	59.69	60.94	57.39	58.21	7.3%
Dedicated Plants	10.94	10.50	10.79	11.61	11.69	13.22	13.82	14.97	16.07	16.51	17.28	19.36	19.92	23.80	6.1%
Cofiring	39.14	39.84	38.66	35.86	35.00	35.97	38.48	41.98	41.93	42.37	42.41	41.58	37.47	34.41	8.4%
Solar Thermal	1.24	1.26	1.27	1.28	1.30	1.31	1.33	1.34	1.36	1.37	1.38	1.40	1.41	1.43	4.0%
Solar Photovoltaic 6/	0.41	0.45	0.50	0.54	0.58	0.63	0.67	0.72	0.76	0.81	0.85	0.89	0.94	0.98	22.6%
Wind	51.12	51.35	51.35	51.35	51.35	51.52	51.52	51.52	51.52	51.52	51.52	51.52	51.63	51.85	5.2%
Total	449.67	450.67	450.40	448.71	448.14	451.27	454.61	459.67	461.47	462.80	464.48	466.26	463.11	464.59	1.5%
End-Use Generators 7/															
Net Summer Capacity															
Conventional Hydropower 8/	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.0%
Geothermal	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	N/A
Municipal Waste 9/	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.0%
Biomass	5.59	5.67	5.78	5.90	6.02	6.13	6.25	6.37	6.50	6.63	6.78	6.91	7.05	7.19	1.9%
Solar Photovoltaic 6/	0.72	0.73	0.76	0.80	0.84	0.89	0.98	1.10	1.22	1.36	1.59	1.84	2.13	2.52	11.2%
Total	7.27	7.37	7.51	7.66	7.82	7.99	8.20	8.43	8.69	8.97	9.33	9.72	10.15	10.68	2.6%
Generation (billion kilowatthours)															
Conventional Hydropower 8/	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	0.0%
Geothermal	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	N/A
Municipal Waste 9/	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	0.0%
Biomass	34.37	34.84	35.47	36.17	36.86	37.53	38.21	38.90	39.67	40.46	41.30	42.09	42.90	43.70	1.8%
Solar Photovoltaic 6/	1.38	1.41	1.46	1.53	1.60	1.69	1.87	2.08	2.32	2.58	3.01	3.49	4.04	4.78	11.2%
Total	41.69	42.18	42.86	43.63	44.40	45.15	46.01	46.91	47.92	48.98	50.24	51.51	52.88	54.41	1.9%

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(gigawatts, unless otherwise noted)

1/ Includes electricity-only and combined heat and power plants whose primary business is to sell electricity, or electricity and heat, to the public.

2/ Includes hydrothermal resources only (hot water and steam).

3/ Includes municipal solid waste, landfill gas, and municipal sewage sludge. Incremental growth is assumed to be for landfill gas facilities. All municipal solid waste is included, although a portion of the municipal solid waste stream contains petroleum-derived plastics and other non-renewable sources.

4/ Facilities co-firing biomass and coal are classified as coal.

5/ Includes projections for energy crops after 2010.

6/ Does not include off-grid photovoltaics (PV). Based on annual PV shipments from 1989 through 2004, EIA estimates that as much as 167 megawatts of remote electricity generation PV applications (i.e., off-grid power systems) were in service in 2004, plus an additional 447 megawatts in communications, transportation, and assorted other non-grid-connected, specialized applications. See Energy Information Administration, Annual Energy Review 2005, DOE/EIA-0384(2005) (Washington, DC, July 2006), Table 10.6 (annual PV shipments, 1989-2004). The approach used to develop the estimate, based on shipment data, provides an upper estimate of the size of the PV stock, including both grid-based and off-grid PV. It will overestimate the size of the stock, because shipments include a substantial number of units that are exported, and each year some of the PV units installed earlier will be retired from service or abandoned.

7/ Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors; and small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

8/ Represents own-use industrial hydroelectric power.

9/ Includes municipal solid waste, landfill gas, and municipal sewage sludge. All municipal solid waste is included, although a portion of the municipal solid waste stream contains petroleum-derived plastics and other non-renewable sources.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2004 and 2005 are model results and may differ slightly from official EIA data reports.

Sources: 2004 and 2005 capacity: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report" (preliminary). 2004 and 2005 generation: EIA, Annual Energy Review 2005, DOE/EIA-0384(2005) (Washington, DC, July 2006). Projections: EIA, AEO2007 National Energy Modeling System run aeo2007.d112106a.