RENEWABLE RESOURCES

Figures

6.1 Percentage of U.S. Renewable and Fossil Fuel Energy Production, 1960-2002…… 185

6.2 Percentage of U.S. Renewable and Fossil Fuel Energy Consumption, 1960-2002…… 187

6.3a Wind verses Electric Grid Power Usage at Camp Williams, May 2000 - Dec. 2002 (yearly data)……..……. 196

6.3b Wind verses Electric Grid Power Usage at Camp Williams, Jan. 2002 - Dec. 2002 (monthly data)….…… 196

Tables

6.1 Total Renewable Net Generation by Source and State, 2001……. 182

6.2 U.S. Electricity Net Generation from Renewable Energy by End Use Sector and Source, 1998-2002……... 183

6.3 U.S. Renewable Energy Production by Source, 1960-2002…… 184

6.4 U.S. Renewable Energy Consumption by Source, 1960-2002…… 186

6.5 U.S. Renewable Energy Consumption by Energy Use Sector and Energy Source, 1998-2002…… 188

6.6a Estimated Renewable Energy Consumption in Utah, 1980-2002 (physical Units)…… 190

6.6b Estimated Renewable Energy Consumption in Utah, 1980-2002 (trillion Btu)…….. 190

6.7 Renewable Energy Facilities in the State of Utah, 2002……. 191

6.8 Proposed Renewable Energy Facilities in the State of Utah……... 194

6.9 Camp Williams Wind Turbine Energy Generation, May 2000-2002……. 195

6.10 Glen Canyon National Recreational Area, Dangling Rope Marina Solar Energy Generation, Sept. 1996 - Nov. 2003…… 197

6.11 Energy Saving Systems Tax Credit in Utah, 1980-2002 (as of Sept. 2003)……... 199

Table 6.1 **Total Renewable Net Generation by Source and State, 2001**

Megawatthours

Rank (by Percent Renewable)	State	Geothermal	Conventional Hydroelectric	Biomass			Solar	Wind	Total Renewable Generation	Total State Generation	Percent Renewable	Percent Renewable (excluding Hydro.)
				Wood / Wood Waste	MSW / Landfill Gas	Other^						
1	Idaho	--	7,223,127	533,333	--	--	--	--	7,756,460	9,346,940	83.0	5.7
2	Washington	--	54,733,892	1,065,093	174,845	47,444	--	--	56,021,274	83,048,665	67.5	1.6
3	Oregon	--	28,644,556	701,120	87,408	--	--	88,587	29,521,671	45,051,910	65.5	1.9
4	South Dakota	--	3,431,865	--	--	--	--	871	3,432,736	7,400,743	46.4	*
5	Maine	--	2,645,123	3,530,143	399,898	158,376	--	--	6,733,540	19,564,815	34.4	20.9
6	Montana	--	6,613,472	65,425	--	--	--	--	6,678,897	24,232,483	27.6	0.3
7	California	12,181,295	25,541,782	3,323,777	1,860,588	409,557	542,271	3,499,738	47,359,008	198,596,086	23.8	11.0
8	Vermont	--	884,211	370,408	--	--	--	12,133	1,266,752	5,480,612	23.1	7.0
9	Alaska	--	1,345,665	--	--	--	--	950	1,346,615	6,743,770	20.0	*
10	New York	--	23,083,943	502,686	2,087,144	--	--	20,540	25,694,313	143,914,537	17.9	1.8
11	New Hampshire	--	990,581	858,769	225,933	--	--	--	2,075,283	15,074,629	13.8	7.2
12	Nevada	1,199,874	2,513,722	--	--	--	--	--	3,713,596	33,875,970	11.0	3.5
13	Alabama	--	8,356,382	4,172,256	3,353	21,094	--	--	12,553,085	125,345,122	10.0	3.3
14	Arkansas	--	2,548,251	1,504,696	--	7,375	--	--	4,060,322	47,192,036	8.6	3.2
15	Arizona	--	7,623,565	--	33,601	5,347	489	--	7,663,002	89,911,270	8.5	*
16	Tennessee	--	6,946,530	779,426	49,219	--	--	--	7,775,175	96,221,985	8.1	0.9
17	Massachusetts	--	702,504	129,768	1,929,386	24,184	--	--	2,785,842	38,478,433	7.2	5.4
18	Hawaii	206,592	100,750	--	401,526	55,657	--	2,125	766,650	10,633,095	7.2	6.3
19	Connecticut	--	286,373	--	1,566,661	211,403	--	--	2,064,437	30,490,640	6.8	5.8
20	Minnesota	--	831,622	574,709	780,011	7,041	--	897,017	3,090,400	48,523,228	6.4	4.7
21	Wisconsin	--	2,056,245	705,354	401,147	86,121	--	72,284	3,321,151	58,763,433	5.7	2.2
22	Georgia	--	2,596,425	2,974,339	28,759	6,213	--	--	5,605,736	118,316,772	4.7	2.5
23	Oklahoma	--	2,344,690	230,696	--	--	--	--	2,575,386	55,249,448	4.7	0.4
24	North Dakota	--	1,332,076	--	--	7,665	--	--	1,339,741	30,332,072	4.4	0.0
25	Virginia	--	1,014,222	1,148,106	990,877	4,896	--	--	3,158,101	74,104,744	4.3	2.9
26	Kentucky	--	3,855,508	9,552	--	--	--	--	3,865,060	95,417,624	4.1	*
27	Louisiana	--	732,217	2,640,656	--	106,892	--	--	3,479,765	87,894,382	4.0	3.1
28	Nebraska	--	1,124,122	--	--	16,721	--	2,630	1,143,473	30,485,214	3.8	0.1
29	North Carolina	--	2,595,708	1,642,330	129,391	8,889	--	--	4,376,318	117,495,853	3.7	1.5
30	Maryland	--	1,183,518	11,939	608,749	29	--	--	1,804,235	49,062,340	3.7	1.3
31	Michigan	--	1,561,918	1,700,261	742,780	64,222	--	280	4,069,461	111,845,612	3.6	2.2
32	Iowa	--	845,153	--	96,733	15,465	--	487,864	1,445,215	40,658,513	3.6	1.5
33	Colorado	--	1,494,704	--	--	64,204	--	48,640	1,607,548	46,876,013	3.4	0.2
34	Wyoming	--	879,111	--	--	--	--	365,162	1,244,273	44,776,941	2.8	0.8
35	Florida	--	147,718	1,828,239	2,989,718	225,325	--	--	5,191,000	190,945,341	2.7	2.6
36	Mississippi	--	--	1,432,117	--	146	--	--	1,432,263	53,446,452	2.7	2.7
37	South Carolina	--	1,225,443	866,107	49,202	537	--	--	2,141,289	89,158,988	2.4	1.0
38	New Jersey	--	18,001	--	1,290,277	12,745	--	--	1,321,023	59,421,254	2.2	2.2
39	Pennsylvania	--	1,650,004	596,736	2,019,472	34,412	--	11,174	4,311,798	196,576,594	2.2	1.4
40	**Utah[1]**	**185,989**	**508,407**	**--**	**9,642**	**--**	**--**	**--**	**704,038**	**35,886,998**	**2.0**	**0.5**
41	Missouri	--	1,104,135	--	--	62,427	--	--	1,166,562	79,544,875	1.5	0.1
42	Rhode Island	--	3,143	--	103,616	--	--	--	106,759	7,501,894	1.4	1.4
43	West Virginia	--	951,944	1,198	25,139	--	--	--	978,281	81,836,725	1.2	*
44	Texas	--	1,200,331	897,605	51,151	58,815	-5	1,187,510	3,395,407	372,580,008	0.9	0.6
45	New Mexico	--	237,320	--	--	18,652	--	--	255,972	33,611,642	0.8	0.1
46	Ohio	--	510,785	403,072	27,888	--	--	--	941,745	142,261,810	0.7	0.3
47	Indiana	--	570,692	--	126,252	4,264	--	--	701,208	122,569,679	0.6	0.1
48	Illinois	--	144,029	--	640,677	87,389	--	--	872,095	179,249,272	0.5	0.4
49	Kansas	--	25,561	--	--	--	--	39,832	65,393	44,748,522	0.1	0.1
50	Delaware	--	--	--	--	--	--	--	--	6,807,686	--	--
51	Dist. of Col.	--	--	--	--	--	--	--	--	123,239	--	--
	Totals	13,773,750	216,961,046	35,199,916	19,931,043	1,833,507	542,755	6,737,337	294,979,354	3,736,676,909	7.9	2.1

Source: EIA, *Renewable Energy Annual, 2002*

*Less than 0.05%

^Agriculture byproducts/crops, sludge waste, tires and other biomass, liquids and gases

[1]EIA only records data from the Blundell Geothermal Plant and not the Cove Fort Plant. Cove Fort's generation data have been added to the overall geothermal total (data obtained from company interviews).

Table 6.2 **U.S. Electricity Net Generation from Renewable Energy by End Use Sector and Source, 1998-2002**
Megawatthours

Sector/Source	1998	1999	2000	2001	2002*
Total	**400,424,069**	**398,959,030**	**356,478,569**	**294,946,110**	**347,450,482**
Biomass	58,786,321	59,612,909	60,726,180	56,964,468	59,401,578
Wood/Wood Waste	36,338,385	37,040,734	37,594,866	35,199,916	36,543,764
MSW/Landfill Gas	19,930,526	20,072,515	20,304,943	19,931,044	20,180,962
Other Biomass^	2,517,410	2,499,660	2,826,371	1,833,508	2,676,851
Geothermal	14,773,918	14,827,013	14,093,158	13,740,503	13,357,034
Conventional Hydroelectric	323,335,661	319,536,028	275,572,597	216,961,046	263,641,906
Solar	502,473	495,082	493,375	542,755	543,853
Wind	3,025,696	4,487,998	5,593,261	6,737,337	10,506,112
Commercial	**2,493,233**	**2,527,117**	**2,111,620**	**1,548,109**	**1,862,248**
Biomass	2,372,766	2,412,455	2,011,871	1,481,627	1,777,785
Wood/Wood Waste	37,716	19,671	26,958	17,626	11,519
MSW/Landfill Gas	2,020,758	2,041,933	1,601,152	1,181,827	1,428,042
Other Biomass^	314,292	350,851	383,761	282,174	338,224
Conventional Hydroelectric	120,468	114,663	99,749	66,482	84,463
Industrial	**33,920,824**	**33,505,006**	**33,626,303**	**30,848,324**	**33,268,441**
Biomass	28,572,251	28,746,698	29,491,148	27,703,056	29,243,521
Wood/Wood Waste	27,692,538	28,060,358	28,651,835	26,888,490	28,212,636
MSW/Landfill Gas	15,637	20,516	30,858	237,273	212,489
Other Biomass^	864,075	665,824	808,456	577,292	818,395
Conventional Hydroelectric	5,348,573	4,758,307	4,135,155	3,145,268	4,024,920
Electric Power	**364,010,012**	**362,926,907**	**320,740,647**	**262,549,676**	**312,319,793**
Biomass	27,841,304	28,453,756	29,223,160	27,779,786	28,380,272
Wood/Wood Waste	8,608,130	8,960,705	8,916,073	8,293,800	8,319,609
MSW/Landfill Gas	17,894,131	18,010,065	18,672,933	18,511,944	18,540,431
Other Biomass^	1,339,043	1,482,985	1,634,155	974,042	1,520,232
Geothermal	14,773,918	14,827,013	14,093,158	13,740,503	13,357,034
Conventional Hydroelectric	317,866,620	314,663,058	271,337,693	213,749,295	259,532,522
Solar	502,473	495,082	493,375	542,755	543,853
Wind	3,025,696	4,487,998	5,593,261	6,737,337	10,506,112

Source: EIA, *Renewable Energy Annual, 2002*

*Preliminary data

^Agriculture byproducts/crops, sludge waste, tires and other biomass, liquids and gases

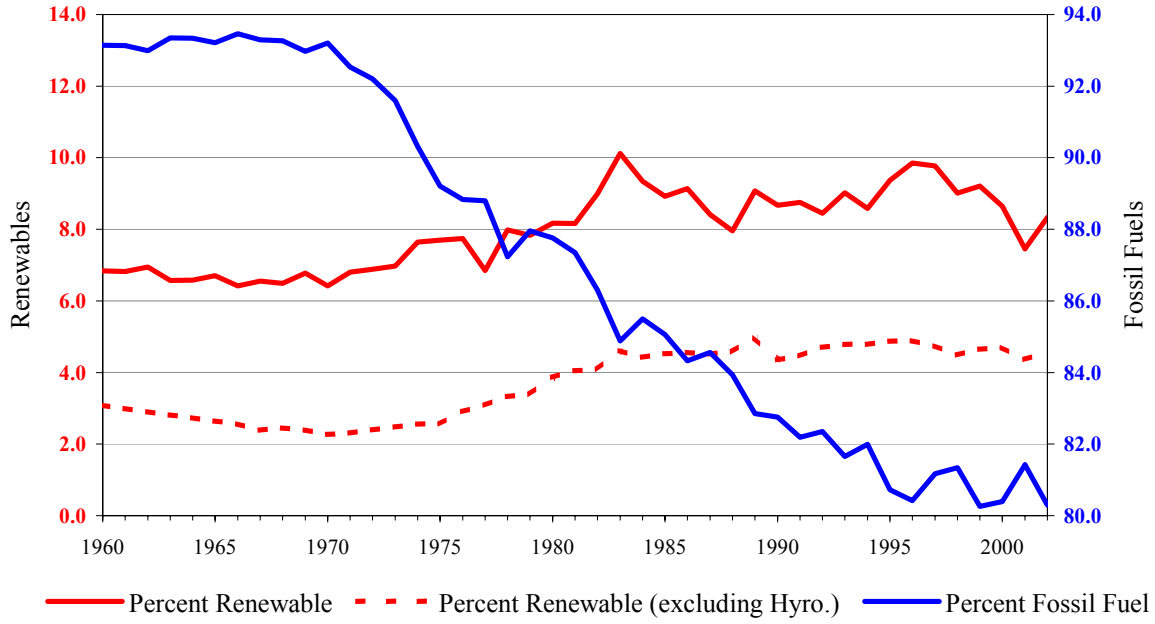
Table 6.3 **U.S. Renewable Energy Production by Source, 1960-2002**

Trillion Btu

Year	Conventional Hydroelectric Power	Biomass (Wood, Waste, and Alcohol Fuels)	Geothermal	Solar	Wind	Total Renewables	Total Fossil Fuels	Overall Total (including Nuclear)	Percent Renewable (excluding Hydro.)	Percent Renewable	Percent Fossil Fuel
1960	1,608	1,320	1	na	na	2,929	39,869	42,804	3.1	6.8	93.1
1961	1,656	1,295	2	na	na	2,953	40,307	43,280	3.0	6.8	93.1
1962	1,816	1,300	2	na	na	3,119	41,732	44,877	2.9	7.0	93.0
1963	1,771	1,323	4	na	na	3,098	44,037	47,174	2.8	6.6	93.4
1964	1,886	1,337	5	na	na	3,228	45,789	49,056	2.7	6.6	93.3
1965	2,059	1,335	4	na	na	3,398	47,235	50,676	2.6	6.7	93.2
1966	2,062	1,369	4	na	na	3,435	50,035	53,534	2.6	6.4	93.5
1967	2,347	1,340	7	na	na	3,694	52,597	56,379	2.4	6.6	93.3
1968	2,349	1,419	9	na	na	3,778	54,306	58,225	2.5	6.5	93.3
1969	2,648	1,440	13	na	na	4,102	56,286	60,541	2.4	6.8	93.0
1970	2,634	1,431	11	na	na	4,076	59,186	63,501	2.3	6.4	93.2
1971	2,824	1,432	12	na	na	4,268	58,042	62,723	2.3	6.8	92.5
1972	2,864	1,503	31	na	na	4,398	58,938	63,920	2.4	6.9	92.2
1973	2,861	1,529	43	na	na	4,433	58,241	63,585	2.5	7.0	91.6
1974	3,177	1,540	53	na	na	4,769	56,331	62,372	2.6	7.6	90.3
1975	3,155	1,499	70	na	na	4,723	54,733	61,357	2.6	7.7	89.2
1976	2,976	1,713	78	na	na	4,768	54,723	61,602	2.9	7.7	88.8
1977	2,333	1,838	77	na	na	4,249	55,101	62,052	3.1	6.8	88.8
1978	2,937	2,038	64	na	na	5,039	55,074	63,137	3.3	8.0	87.2
1979	2,931	2,152	84	na	na	5,166	58,006	65,948	3.4	7.8	88.0
1980	2,900	2,485	110	na	na	5,494	59,008	67,241	3.9	8.2	87.8
1981	2,758	2,590	123	na	na	5,471	58,529	67,007	4.0	8.2	87.3
1982	3,266	2,615	105	na	na	5,985	57,458	66,574	4.1	9.0	86.3
1983	3,527	2,831	129	na	< 0.5	6,488	54,416	64,106	4.6	10.1	84.9
1984	3,386	2,880	165	< 0.5	< 0.5	6,431	58,849	68,832	4.4	9.3	85.5
1985	2,970	2,864	198	< 0.5	< 0.5	6,033	57,539	67,647	4.5	8.9	85.1
1986	3,071	2,841	219	< 0.5	< 0.5	6,132	56,575	67,087	4.6	9.1	84.3
1987	2,635	2,823	229	< 0.5	< 0.5	5,687	57,167	67,608	4.5	8.4	84.6
1988	2,334	2,937	217	< 0.5	< 0.5	5,489	57,875	68,951	4.6	8.0	83.9
1989	2,837	3,062	317	55	19	6,294	57,468	69,364	5.0	9.1	82.8
1990	3,046	2,662	336	60	24	6,133	58,529	70,729	4.4	8.7	82.8
1991	3,016	2,702	346	63	27	6,158	57,829	70,362	4.5	8.8	82.2
1992	2,617	2,847	349	64	30	5,907	57,590	69,933	4.7	8.4	82.4
1993	2,892	2,804	364	66	31	6,157	55,736	68,262	4.8	9.0	81.7
1994	2,683	2,939	338	69	36	6,065	57,952	70,676	4.8	8.6	82.0
1995	3,205	3,068	294	70	33	6,669	57,440	71,156	4.9	9.4	80.7
1996	3,590	3,127	316	71	33	7,137	58,281	72,472	4.9	9.8	80.4
1997	3,640	3,006	325	70	34	7,075	58,758	72,389	4.7	9.8	81.2
1998	3,297	2,835	328	70	31	6,561	59,204	72,787	4.5	9.0	81.3
1999	3,268	2,885	331	69	46	6,599	57,505	71,652	4.6	9.2	80.3
2000	2,811	2,907	317	66	57	6,158	57,254	71,218	4.7	8.6	80.4
2001	2,201	2,678	311	64	59	5,324	58,109	71,372	4.4	7.5	81.4
2002	2,668	2,756	304	85	85	5,899	56,857	70,812	4.6	8.3	80.3

Source: EIA, *Annual Energy Review, 2002*

Figure 6.1 **Percentage of U.S. Renewable and Fossil Fuel Energy Production, 1960-2002**



Source: EIA, *Annual Energy Review, 2002*

Table 6.4 **U.S. Renewable Energy Consumption by Source, 1960-2002**

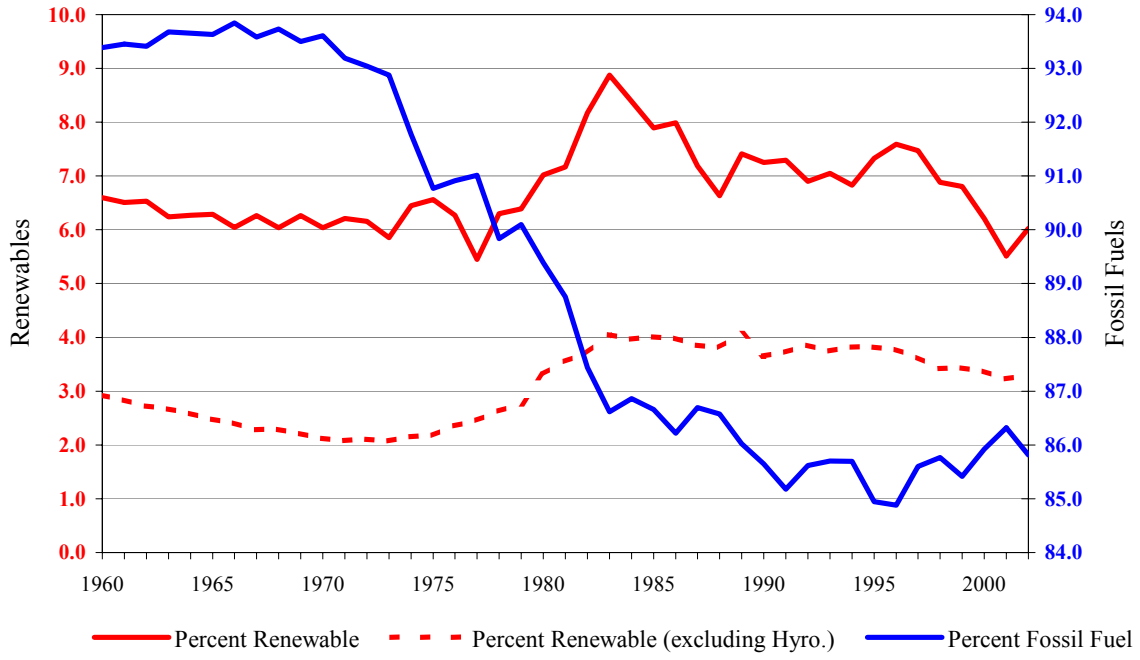
Trillion Btu

Year	Conventional Hydroelectric Power	Biomass			Geothermal	Solar	Wind	Total Renewables	Total Fossil Fuels	Overall Total (including Nuclear)	Percent Renewable (excluding Hydro.)	Percent Renewable	Percent Fossil Fuel
		Wood	Waste	Alcohol Fuels									
1960	1,657	1,320	na	na	1	na	na	2,978	42,137	45,120	2.9	6.6	93.4
1961	1,680	1,295	na	na	2	na	na	2,977	42,758	45,755	2.8	6.5	93.4
1962	1,822	1,300	na	na	2	na	na	3,124	44,681	47,832	2.7	6.5	93.4
1963	1,772	1,323	na	na	4	na	na	3,099	46,509	49,647	2.7	6.2	93.7
1964	1,907	1,337	na	na	5	na	na	3,249	48,543	51,831	2.6	6.3	93.7
1965	2,058	1,335	na	na	4	na	na	3,397	50,577	54,016	2.5	6.3	93.6
1966	2,073	1,369	na	na	4	na	na	3,446	53,514	57,024	2.4	6.0	93.8
1967	2,344	1,340	na	na	7	na	na	3,691	55,127	58,906	2.3	6.3	93.6
1968	2,342	1,419	na	na	9	na	na	3,770	58,502	62,415	2.3	6.0	93.7
1969	2,659	1,440	na	na	13	na	na	4,112	61,362	65,628	2.2	6.3	93.5
1970	2,654	1,429	2	na	11	na	na	4,096	63,522	67,858	2.1	6.0	93.6
1971	2,861	1,430	2	na	12	na	na	4,305	64,596	69,314	2.1	6.2	93.2
1972	2,944	1,501	2	na	31	na	na	4,478	67,696	72,758	2.1	6.2	93.0
1973	2,861	1,527	2	na	43	na	na	4,433	70,316	75,708	2.1	5.9	92.9
1974	3,177	1,538	2	na	53	na	na	4,770	67,906	73,991	2.2	6.4	91.8
1975	3,155	1,497	2	na	70	na	na	4,724	65,355	71,999	2.2	6.6	90.8
1976	2,976	1,711	2	na	78	na	na	4,767	69,104	76,012	2.4	6.3	90.9
1977	2,333	1,837	2	na	77	na	na	4,249	70,989	78,000	2.5	5.4	91.0
1978	2,937	2,036	1	na	64	na	na	5,038	71,856	79,986	2.6	6.3	89.8
1979	2,931	2,150	2	na	84	na	na	5,167	72,892	80,903	2.8	6.4	90.1
1980	2,900	2,483	2	na	110	na	na	5,495	69,984	78,289	3.3	7.0	89.4
1981	2,758	2,495	88	7	123	na	na	5,471	67,750	76,335	3.6	7.2	88.8
1982	3,266	2,477	119	19	105	na	na	5,986	64,036	73,234	3.7	8.2	87.4
1983	3,527	2,639	157	35	129	na	< 0.5	6,487	63,290	73,066	4.1	8.9	86.6
1984	3,386	2,629	208	43	165	< 0.5	< 0.5	6,431	66,617	76,693	4.0	8.4	86.9
1985	2,970	2,576	236	52	198	< 0.5	< 0.5	6,032	66,221	76,417	4.0	7.9	86.7
1986	3,071	2,518	263	60	219	< 0.5	< 0.5	6,131	66,148	76,722	4.0	8.0	86.2
1987	2,635	2,465	289	69	229	< 0.5	< 0.5	5,687	68,626	79,156	3.9	7.2	86.7
1988	2,334	2,552	315	70	217	< 0.5	< 0.5	5,488	71,660	82,774	3.8	6.6	86.6
1989	2,837	2,637	354	71	317	55	22	6,293	73,023	84,886	4.1	7.4	86.0
1990	3,046	2,191	408	63	337	60	29	6,134	72,460	84,605	3.6	7.3	85.6
1991	3,016	2,190	440	73	351	63	31	6,164	71,996	84,522	3.7	7.3	85.2
1992	2,617	2,290	473	83	368	64	30	5,925	73,519	85,866	3.9	6.9	85.6
1993	2,892	2,227	479	97	382	66	31	6,174	75,055	87,578	3.7	7.0	85.7
1994	2,683	2,315	515	109	366	69	36	6,093	76,480	89,248	3.8	6.8	85.7
1995	3,205	2,420	531	117	312	70	33	6,688	77,488	91,221	3.8	7.3	84.9
1996	3,590	2,467	577	84	329	71	33	7,151	79,979	94,224	3.8	7.6	84.9
1997	3,640	2,350	551	106	325	70	34	7,076	81,086	94,727	3.6	7.5	85.6
1998	3,297	2,175	542	105	328	70	31	6,549	81,592	95,135	3.4	6.9	85.8
1999	3,268	2,224	540	110	331	69	46	6,587	82,650	96,763	3.4	6.8	85.4
2000	2,811	2,257	511	126	317	66	57	6,145	85,001	98,927	3.4	6.2	85.9
2001	2,201	2,017	514	133	311	65	68	5,310	83,131	96,307	3.2	5.5	86.3
2002*	2,668	2,031	550	156	304	64	106	5,881	83,711	97,551	3.3	6.0	85.8

Source: EIA, *Annual Energy Review, 2002*

*Preliminary data

Figure 6.2 **Percentage of U.S. Renewable and Fossil Fuel Energy Consumption, 1960-2002**



Source: EIA, *Annual Energy Review, 2002*

Table 6.5 **U.S. Renewable Energy Consumption by Energy Use Sector and Energy Source, 1998-2002**

Trillion Btu

Sector/Source	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002*
Total	**6,152**	**6,150**	**5,902**	**6,148**	**6,053**	**6,657**	**7,129**	**7,065**	**6,549**	**6,587**	**6,145**	**5,310**	**5,881**
Biomass	2,681	2,694	2,842	2,795	2,928	3,056	3,120	2,996	2,823	2,873	2,461	2,232	2,297
Wood	2,191	2,190	2,290	2,228	2,315	2,420	2,467	2,350	2,175	2,224	2,257	2,017	2,032
Waste^	408	440	473	479	515	531	577	551	542	540	511	514	550
Alcohol Fuels	82	65	78	88	97	105	76	96	105	110	126	133	156
Geothermal	336	346	349	364	338	294	316	325	328	331	24	25	304
Conventional Hydroelectric	3,046	3,016	2,617	2,892	2,683	3,205	3,590	3,640	3,205	3,117	2,625	2,201	2,668
Solar	60	63	64	66	69	70	71	70	65	64	61	65	58
Wind	29	31	30	31	36	33	33	34	0	0	0	1	2
Residential	**642**	**677**	**711**	**616**	**607**	**667**	**667**	**506**	**459**	**486**	**503**	**476**	**419**
Biomass	581	613	645	548	537	596	595	433	387	414	433	407	350
Wood	581	613	645	548	537	596	595	433	387	414	433	407	350
Geothermal	6	6	6	7	6	7	7	8	8	9	9	9	10
Solar	56	58	60	62	64	65	65	65	65	64	61	60	58
Commercial	**71**	**72**	**81**	**84**	**86**	**92**	**110**	**113**	**111**	**114**	**109**	**89**	**98**
Biomass	67	68	76	79	81	86	103	107	102	106	100	80	88
Wood	39	41	44	46	46	46	50	49	48	52	53	41	41
Waste^	28	26	32	33	35	40	53	58	54	54	47	39	47
Geothermal	3	3	3	3	4	5	5	6	7	7	8	8	9
Conventional Hydroelectric	1	1	1	1	1	1	1	1	1	1	1	1	1
Industrial	**1,667**	**1,626**	**1,672**	**1,697**	**1,844**	**1,905**	**1,971**	**1,976**	**1,841**	**1,843**	**1,828**	**1,630**	**1,724**
Biomass	1,634	1,595	1,640	1,666	1,779	1,847	1,907	1,915	1,784	1,791	1,781	1,593	1,678
Wood	1,442	1,410	1,461	1,484	1,580	1,652	1,683	1,731	1,603	1,620	1,636	1,443	1,506
Waste^	192	185	179	181	199	195	224	184	180	171	145	150	172
Geothermal	2	2	2	2	3	3	3	3	3	4	4	5	5
Conventional Hydroelectric	31	30	31	30	62	55	61	58	55	49	42	32	41
Transportation													
Alcohol Fuels	**82**	**65**	**78**	**88**	**97**	**105**	**76**	**96**	**105**	**110**	**126**	**133**	**156**

Table 6.5 Cont.

Sector/Source	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002*
Electric Power	**3,689**	**3,710**	**3,360**	**3,662**	**3,420**	**3,889**	**4,305**	**4,375**	**4,032**	**4,034**	**3,579**	**2,982**	**3,485**
Electric Utilities	3,151	3,114	2,712	2,953	2,714	3,173	3,553	3,620	3,279	3,123	2,607	2,031	2,464
Biomass	22	21	22	21	21	17	20	20	21	20	21	19	25
Wood	8	8	8	9	8	7	8	8	7	7	7	6	8
Waste^	13	14	13	11	13	10	12	13	13	13	14	13	16
Geothermal	181	170	169	158	145	99	110	115	109	36	3	3	4
Conventional Hydroelectric	2,948	2,923	2,521	2,774	2,549	3,056	3,423	3,485	3,149	3,067	2,582	2,007	2,434
Solar	0	0	0	0	0	0	0	0	0	0	0	0	0
Wind	0	0	0	0	0	0	0	0	0	0	0	1	2
Independent Power Producers	538	596	648	709	705	716	752	754	753	910	972	951	1,021
Biomass	295	333	381	394	413	405	418	426	424	433	432	432	441
Wood	120	118	132	141	144	119	130	129	129	131	127	121	127
Waste^	175	215	249	253	269	286	288	296	294	302	305	311	315
Geothermal	145	165	168	193	180	181	191	194	202	276	293	286	277
Conventional Hydroelectric	66	62	65	87	72	93	104	96	92	151	185	162	193
Solar	4	5	4	5	5	5	5	5	5	5	5	5	5
Wind	29	31	30	31	36	33	33	34	31	46	57	67	104

Source: EIA, *Renewable Energy Annual, 2002*

*Preliminary data

^Municipal solid waste, landfill gases, agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids, and gases

Table 6.6a **Estimated Renewable Energy Consumption in Utah, 1980-2002**

Physical Units

Year	Residential		Industrial		Electric Utility[1]	
	Biofuels	Solar	Biofuels^	Hydroelectric	Geothermal[2]	Hydroelectric
	Thousand cords	Million kilowatthours	Thousand Cords	Million kilowatthours	Million kilowatthours	Million kilowatthours
1980	189	--	47	--	--	821
1981	191	--	54	--	--	623
1982	206	--	47	--	--	1,024
1983	204	--	54	--	--	1,394
1984	276	--	54	--	38	1,391
1985	269	--	54	--	109	1,019
1986	262	--	70	--	171	1,413
1987	135	--	70	--	127	893
1988	141	--	70	--	174	593
1989	146	--	31	--	173	562
1990	148	n	16	23	152	508
1991	156	n	16	23	186	627
1992	164	n	16	23	233	602
1993	158	n	16	42	187	860
1994	155	n	16	34	233	750
1995	172	n	16	42	168	969
1996	171	n	23	30	223	1,049
1997	177	n	23	14	204	1,344
1998	160	n	23	16	195	1,315
1999	171	n	124	8	194	1,255
2000	179	n	132	8	196	751
2001	178*	na	na	na	195	508
2002	180*	na	na	na	214	476

Table 6.6b **Estimated Renewable Energy Consumption in Utah, 1980-2002**

Trillion Btu

Year	Residential		Industrial		Electric Utility[1]		Total
	Biofuels	Solar	Biofuels	Hydroelectric	Geothermal	Hydroelectric	
1980	3.8	--	0.6	--	--	8.5	12.9
1981	3.8	--	0.7	--	--	6.5	11.0
1982	4.1	--	0.6	--	--	10.6	15.3
1983	4.1	--	0.7	--	--	14.5	19.3
1984	5.5	--	0.7	--	0.8	14.4	21.4
1985	5.4	--	0.7	--	2.3	10.6	19.0
1986	5.2	--	0.9	--	3.6	14.7	24.3
1987	2.7	--	0.9	--	2.7	9.3	15.5
1988	2.8	--	0.9	--	3.7	6.1	13.5
1989	2.9	--	0.4	--	3.6	5.8	12.8
1990	3.0	n	0.2	0.2	3.2	5.3	11.9
1991	3.1	n	0.2	0.2	3.9	6.5	13.9
1992	3.3	n	0.2	0.2	4.9	6.2	14.8
1993	3.2	n	0.2	0.4	3.9	8.9	16.7
1994	3.1	0.1	0.2	0.4	4.9	7.8	16.5
1995	3.4	0.1	0.2	0.4	3.5	10.0	17.7
1996	3.4	0.1	0.3	0.3	4.7	10.9	19.7
1997	3.5	0.1	0.3	0.1	4.3	13.9	22.2
1998	3.2	0.1	0.3	0.2	4.1	13.6	21.5
1999	3.4	n	1.6	0.1	4.1	13.0	22.2
2000	3.6	n	1.7	0.1	4.1	7.8	17.3
2001	3.6*	na	na	na	4.1	5.3	na
2002	3.6*	na	na	na	4.5	4.9	na

Source: EIA, State Energy Data Report

[1]Data from EIA Form-906

[2]EIA only records data from the Blundell Geothermal Plant and not the Cove Fort Plant. Cove Fort's consumption data have been added to the overall geothermal total for 1992 to present (data obtained from company interviews).

n = less than 1 million kilowatthours or less than 0.1 trillion Btu

^Industrial biofuel numbers estimated using the conversion factor: 0.0129 trillion Btu / thousand cords (this is an average of several woods burned in Utah)

*UEO estimations

Table 6.7 **Renewable Energy Facilities in the State of Utah, 2002**

Technology	# of Facilities	Capacity (kW)
Biomass	2	5,600
Geothermal	2	39,300
Solar	25	265
Wind	3	276
Hydro	71	288,195
Total	103	333,636

Technology	Owner / Operator	Fuel Type	Plant Name / Location / Use	Capacity (kW)
Biomass	Davis County SWM and Energy Recovery	Municipal Solid Waste (Incl. Industrial, Medical)	Davis County SWM and Energy Recovery / Layton	1,600
Biomass	Garkane Power Assn. Inc.	Timber Residues (Milling And Logging Residues)	Kaibab Industries	4,000
Geothermal	PacifiCorp	Geothermal Steam	Blundell	26,100
Geothermal	Utah Municipal Power Agency (UMPA)	Geothermal Steam	Cove Fort	13,200
Photovoltaic	Confidential	Solar	MSR Residential / Vernal	1
Photovoltaic	Arches National Park	Solar	Devil's Garden Campground	5.6
Photovoltaic	Bryce Canyon National Park	Solar	Water Pumping	1.5
Photovoltaic	Bryce Canyon National Park	Solar	Pressurize Water System	0.48
Photovoltaic	Canyonlands National Park	Solar	Hans Flat Facility	7.2
Photovoltaic	Dinosaur National Monument	Solar	Ranger Cabin	0.384
Photovoltaic	Glen Canyon National Recreation Area	Solar	Dangling Rope Facility	160
Photovoltaic	Natural Bridges National Monument	Solar	Monument Facilities	60
Photovoltaic	Zion National Park	Solar	Visitor Center - grid tied	7.2
Photovoltaic	Zion National Park	Solar	Ranger Cabin	0.384
Photovoltaic	Zion National Park	Solar	Ranger Cabin	0.384
Photovoltaic	Cal Black Airport	Solar	Airport Facilities	6
Photovoltaic	Antelope Island State Park	Solar	Garr Ranch Facility	1.5
Photovoltaic	Antelope Island State Park	Solar	Marina Lighting	0.03
Photovoltaic	Antelope Island State Park	Solar	Radio Repeater	0.09
Photovoltaic	Cunningham Ranch	Solar	Wildlife Education Center	2.4
Photovoltaic	Dead Horse Point State Park	Solar	Pressurize Water System - Point System	0.33
Photovoltaic	Dead Horse Point State Park	Solar	Pressurize Water System - Group Site	0.33
Photovoltaic	Goblin Valley State Park	Solar	Employee Housing	3.6
Photovoltaic	Goblin Valley State Park	Solar	Water Pumping	4
Photovoltaic	Monte Cristo Snow Cat Shed	Solar	Lighting, Power Tools, Radios	1.8
Photovoltaic	Salt Creek Waterfowl Management Area	Solar	Water Pumping	0.26
Photovoltaic	Snow Canyon State Park	Solar	Entrance Station	0.45
Photovoltaic	Yuba Lake State Park	Solar	Cabana Lighting	0.2
Photovoltaic	Yuba Lake State Park	Solar	Radio Repeater	0.025
Wind	U.S. Department of Defense	Wind	Camp Williams - grid tied	225
Wind	Fox	Wind	Fox / Lehi	18
Wind	Utah Municipal Power Agency	Wind	UMPA Wind Project / Spanish Fork	33
Hydro*	Arizona Micro-Porcupine	Water	Arizona Micro-Porcupine	566
Hydro	Beaver City Mun. Elec. Light and Water	Water	Beaver #3	650
Hydro	Beaver City Mun. Elec. Light and Water	Water	Beaver Lower	280
Hydro	Beaver City Mun. Elec. Light and Water	Water	Beaver Upper	630
Hydro*	BMB Enterprises Inc.	Water	Granite Creek	350

Table 6.7 Cont.

Technology	Owner	Fuel Type	Plant Name	Capacity (kW)
Hydro*	Bountiful City Light and Power	Water	East Canyon Dam	2,499
Hydro	Bountiful City Light and Power	Water	Echo Dam	4,500
Hydro	Bountiful City Light and Power	Water	Pine View Dam	1,800
Hydro	Brigham City Light and Power	Water	Box Elder	500
Hydro	Brigham City Light and Power	Water	Brigham City	1,200
Hydro	Bureau of Reclamation	Water	Deer Creek	4,960
Hydro	Bureau of Reclamation	Water	Flaming Gorge	151,500
Hydro*	City of North Logan	Water	Green Canyon	450
Hydro*	Douglass George	Water	Deep Creek	125
Hydro	Ephraim City Power Dept.	Water	Hydro No. 4 - Masen Plant	120
Hydro	Ephraim City Power Dept.	Water	Hydro Plant No. 1	200
Hydro	Ephraim City Power Dept.	Water	Hydro Plant No. 3	2,890
Hydro	Garkane Power Assn. Inc.	Water	Boulder Hydroelectric	4,500
Hydro	Garkane Power Assn. Inc.	Water	Lower Boulder	700
Hydro	Heber Light and Power Dept.	Water	Lake Creek	1,500
Hydro	Heber Light and Power Dept.	Water	Snake Creek	800
Hydro	Hyrum City Corp.	Water	Hyrum	500
Hydro	Levan Mun. Elec. Light System	Water	Cobble Rock	110
Hydro	Levan Mun. Elec. Light System	Water	Pigeon Creek	800
Hydro	Logan City Mun. Light and Power	Water	Logan 2	6,600
Hydro	Logan City Mun. Light and Power	Water	Logan 3	2,100
Hydro	Manti Light and Power Company	Water	Manti Lower	1,200
Hydro	Manti Light and Power Company	Water	Manti Upper	1,600
Hydro	Monroe City Elec. Light Dept.	Water	Lower	250
Hydro	Monroe City Elec. Light Dept.	Water	Monroe Pumping Station	100
Hydro	Monroe City Elec. Light Dept.	Water	Upper	250
Hydro	Moon Lake Electric Assn. Inc.	Water	Uintah	1,200
Hydro	Moon Lake Electric Assn. Inc.	Water	Yellowstone	900
Hydro	Mt Pleasant Mun. Elec. And Power Dept.	Water	Lower	150
Hydro	Mt Pleasant Mun. Elec. And Power Dept.	Water	Lower Debris Basin	1,250
Hydro	Mt Pleasant Mun. Elec. And Power Dept.	Water	Pressure Reducing Station	225
Hydro	Mt Pleasant Mun. Elec. And Power Dept.	Water	Upper	180
Hydro	Murray City Power Dept.	Water	Little Cottonwood Creek	4,900
Hydro	Nephi Municipal Electric Dept.	Water	Bradley	200
Hydro	Nephi Municipal Electric Dept.	Water	Salt Creek	500
Hydro	PacifiCorp	Water	American Fork	950
Hydro	PacifiCorp	Water	Cutler	30,000
Hydro	PacifiCorp	Water	Fountain Green	160
Hydro	PacifiCorp	Water	Granite	2,000
Hydro	PacifiCorp	Water	Gunlock	750
Hydro	PacifiCorp	Water	Olmstead	10,300
Hydro	PacifiCorp	Water	Pioneer	5,000
Hydro	PacifiCorp	Water	Sand Cove	650
Hydro	PacifiCorp	Water	Snake Creek	1,180
Hydro	PacifiCorp	Water	Stairs	1,000
Hydro	PacifiCorp	Water	Upper Beaver	2,400
Hydro	PacifiCorp	Water	Veho	500
Hydro	PacifiCorp	Water	Weber	3,900
Hydro	Parawon City Electrical Dept.	Water	Paragonah / Red Creek	600
Hydro	Parowan City Electrical Dept.	Water	Center Creek	600
Hydro*	Perpetual Storage Inc.	Water	Little Cottonwood Creek	5,000
Hydro	Springville Mun. Power and Light Dept.	Water	Bartholomew	1,500
Hydro	Springville Mun. Power and Light Dept.	Water	Hobble Creek	300
Hydro	Spring City Light and Power Plant	Water	Spring City	300
Hydro	Springville Mun. Power and Light Dept.	Water	Spring Creek	500
Hydro	Springville Mun. Power and Light Dept.	Water	Upper Bartholomew	200

Table 6.7 Cont.

Technology	Owner	Fuel Type	Plant Name	Capacity (kW)
Hydro	St George City Water and Power Dept.	Water	Pine Valley	600
Hydro	St. George City Water and Power Dept.	Water	Gunlock Hydro	380
Hydro	Strawberry Water Users Assn.	Water	Payson	400
Hydro	Strawberry Water Users Assn.	Water	Spanish Fork	3,750
Hydro*	Thayn Lee R and A Leon	Water	Thayn	400
Hydro	Washington County WCD	Water	Quail Creek	2,340
Hydro	Weber Basin Water Conserv. Dist.	Water	Gateway	4,000
Hydro	Weber Basin Water Conserv. Dist.	Water	Wanship	1,900
Hydro**	Weber Basin Water Conserv. Dist.	Water	Causey	2,100
Hydro*	Whitmore Hydroelectric Co.	Water	Whitmore Upper	800

Source: National Renewable Energy Laboratory - Renewable Electric Plant Information System (REPiS), 2002
EIA, *Electric Power Annual*, Electric Generating Capacity 2002-2000 - Form EIA-860
UEO for Solar data

No asterisk - Hydro. data recorded by both EIA and REPiS
* - Hydro. data recorded by REPiS but not by EIA
** - Recorded by EIA but not by REPiS

Note: This table does not include small residential renewable energy sources

Table 6.8 **Proposed Renewable Energy Facilities in the State of Utah**

Technology	Owner	Fuel Type	Plant Name	Capacity (kW)	Planned Year of Operation
Photovoltaic	Western Area Power Administration	Solar	Western APA - Regional Office	2	2004
Geothermal	Pacificorp / California Energy	Geothermal Steam	Roosevelt - Blundell Expansion	30,000 (?)	2005
Wind	Tasco Engineering	Wind	Stockton Bar Wind Farm	25,000	2005
Wind	Federal Government	Wind	Camp Williams - Extension	750	2004
Wind	Jack Rabbit Gas Station	Wind	Jack Rabbit Gas Station	50	2004
Hydro	Bountiful City Light and Power	Water	Joes Valley Dam	4,250	?

Source: National Renewable Energy Laboratory - Renewable Electric Plant Information System (REPiS), 2002

Table 6.9 **Camp Williams Wind Turbine Energy Generation, May 2000-2002**

Commission Date: May 20, 2000
Capacity: 0.225 megawatts
Location: Western slope of Traverse Mountains, Utah County (near Point of the Mountain)

	Hours	Days
In Service	22,944	956
Operational	17,667	736
Down	5,277	220
Wind	18,976	790
No Wind	3,968	165
Failed	3,265	136

Year/Month	Electricity from Wind	Electricity from Grid	Total	% Electricity from Wind
	kWh	kWh	kWh	
2002	224,312	5,632,407	5,856,719	3.83
Jan.	14,661	523,015	537,676	2.73
Feb.	24,933	505,611	530,544	4.70
Mar.	6,532	462,345	468,877	1.39
Apr.	29,470	347,310	376,780	7.82
May	24,326	379,586	403,912	6.02
Jun.	26,032	444,774	470,806	5.53
Jul.	13,895	595,658	609,553	2.28
Aug.	15,064	584,607	599,671	2.51
Sep.	18,914	412,624	431,538	4.38
Oct.	15,148	416,114	431,262	3.51
Nov.	14,989	449,635	464,624	3.23
Dec.	20,348	511,129	531,477	3.83
2001	230,729	6,256,555	6,487,284	3.56
2000	139,951	2,884,739	3,024,690	4.63

Source: Camp Williams

Figure 6.3a **Wind verses Electric Grid Power Usage at Camp Williams, May 2000 – Dec. 2002**

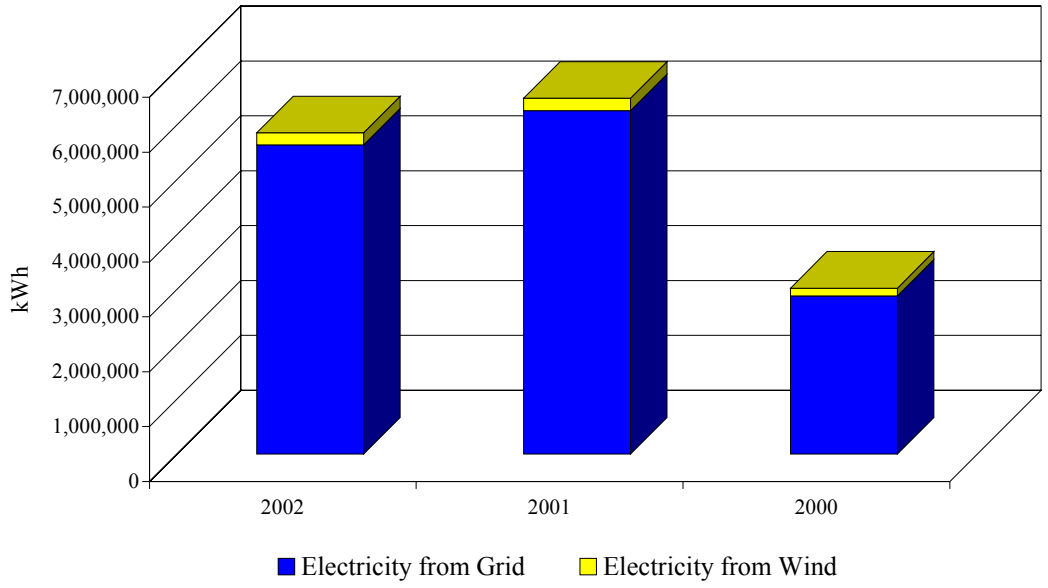
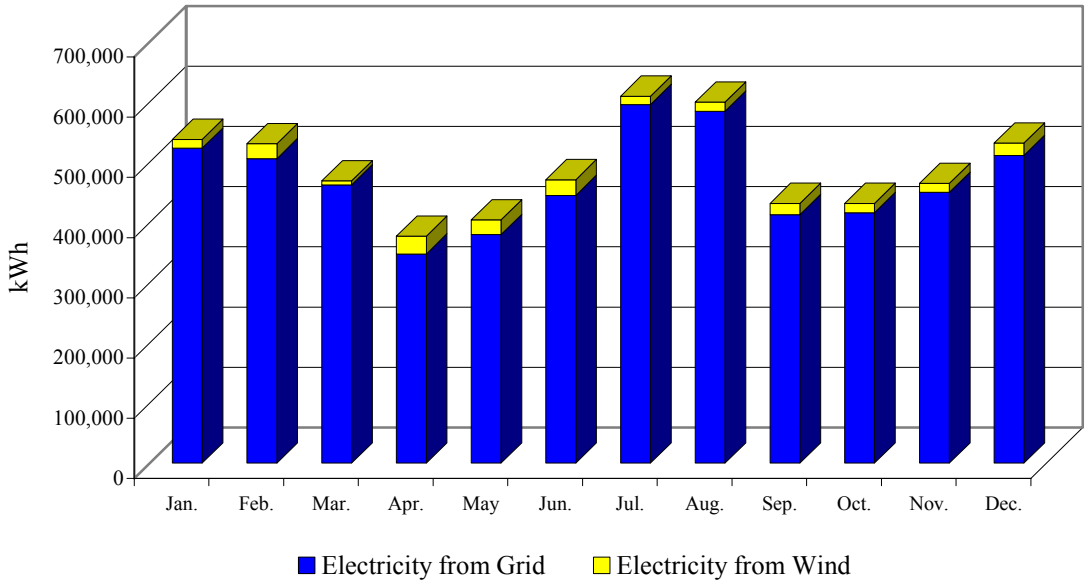


Figure 6.3b **Wind verses Electric Grid Power Usage at Camp Williams, Jan. 2002 – Dec. 2002**



Source: Camp Williams

Table 6.10 Glen Canyon National Recreational Area, Dangling Rope Marina Solar Energy Generation, Sept. 1996 - Nov. 2003

Commission Date:	September 1996
Capacity:	Sept. 1996 thru Dec. 1998 - 115 kW
	Dec. 1998 thru present - 160 kW
Initial cost of entire hybrid system:	$1,450,000
Cost of expansion:	$306,000
Total cost:	$1,756,000
Amount of fuel consumed before solar:	~109,000 gallons per year of propane fuel
Amount of fuel consumed, 1996-1998:	~53,600 gallons per year
Amount of fuel consumed, 1999-present:	~39,600 gallons per year
Generator run-time before solar:	~8,760 hours per year
Generator run-time, 1996-1998:	~2,500 hours per year
Generator run-time, 1999-present:	~1,850 hours per year
Average % electricity from solar (1999-present):	54.4
Average % electricity from propane generator (1999-present):	45.6
Average kWh from solar per day (1999-present):	715.28
Average kWh from propane generator per day (1999-present):	670.64

Year/Month	Electricity from Solar	Electricity from Propane Generator	Load Energy	Loses	Days Operational	% Electricity from Solar
	kWh	kWh	kWh	kWh		
2003						
Jan.	na	na	na	na	na	na
Feb.	na	na	na	na	na	na
Mar.	na	na	na	na	na	na
Apr.	na	na	na	na	na	na
May	11,816	6,942	16,196	2,562	13	63.0
Jun.	27,602	28,225	43,766	12,061	30	49.4
Jul.	25,702	37,843	50,608	12,936	31	40.4
Aug.	25,033	33,543	48,565	10,011	31	42.7
Sep.	26,270	20,107	35,946	10,431	30	56.6
Oct.	19,748	16,248	27,052	8,944	30	54.9
Nov.	17,400	20,003	25,909	11,494	30	46.5
Dec.	--	--	--	--	--	--
2002						
Jan.	na	na	na	na	na	na
Feb.	na	na	na	na	na	na
Mar.	na	na	na	na	na	na
Apr.	na	na	na	na	na	na
May	na	na	na	na	na	na
Jun.	na	na	na	na	na	na
Jul.	na	na	na	na	na	na
Aug.	na	na	na	na	na	na
Sep.	na	na	na	na	na	na
Oct.	na	na	na	na	na	na
Nov.	na	na	na	na	na	na
Dec.	na	na	na	na	na	na
2001						
Jan.	na	na	na	na	na	na
Feb.	na	na	na	na	na	na
Mar.	na	na	na	na	na	na
Apr.	na	na	na	na	na	na
May	na	na	na	na	na	na
Jun.	na	na	na	na	na	na
Jul.	na	na	na	na	na	na
Aug.	na	na	na	na	na	na
Sep.	na	na	na	na	na	na
Oct.	na	na	na	na	na	na
Nov.	na	na	na	na	na	na
Dec.	na	na	na	na	na	na

Table 6.10 Cont.

Year/Month	Electricity from Solar	Electricity from Propane Generator	Load Energy	Loses	Days Operational	% Electricity from Solar
	kWh	kWh	kWh	kWh		
2000						
Jan.	11,088	13,313	17,341	7,060	23	45.4
Feb.	15,524	14,260	23,324	6,460	29	52.1
Mar.	22,113	8,892	23,969	7,036	31	71.3
Apr.	25,255	6,365	22,501	9,119	29	79.9
May	26,886	11,896	31,635	7,147	31	69.3
Jun.	24,570	24,746	40,875	8,441	30	49.8
Jul.	25,169	29,121	46,181	8,109	31	46.4
Aug.	23,850	35,122	46,766	12,206	31	40.4
Sep.	23,012	24,827	39,124	8,714	30	48.1
Oct.	19,581	18,305	30,019	7,867	31	51.7
Nov.	na	na	na	na	na	na
Dec.	na	na	na	na	na	na
1999						
Jan.	8,463	27,124	26,983	8,604	29	23.8
Feb.	18,706	8,291	22,446	4,552	28	69.3
Mar.	22,968	3,614	21,415	5,167	30	86.4
Apr.	18,718	10,176	23,671	5,223	29	64.8
May	25,140	11,270	28,184	8,225	31	69.0
Jun.	23,513	20,360	37,474	6,399	30	53.6
Jul.	22,364	35,391	46,352	11,403	31	38.7
Aug.	15,561	44,456	45,165	14,852	31	25.9
Sep.	21,341	23,112	36,819	7,633	30	48.0
Oct.	23,028	12,910	26,198	9,740	31	64.1
Nov.	20,151	7,710	21,860	6,001	30	72.3
Dec.	18,845	17,213	27,064	8,994	31	52.3
1998						
Jan.	na	na	na	na	na	na
Feb.	na	na	na	na	na	na
Mar.	na	na	na	na	na	na
Apr.	na	na	na	na	na	na
May	na	na	na	na	na	na
Jun.	na	na	na	na	na	na
Jul.	na	na	na	na	na	na
Aug.	na	na	na	na	na	na
Sep.	14,404	30,707	37,572	7,540	29	31.9
Oct.	13,796	27,556	33,463	7,889	31	33.4
Nov.	10,345	25,376	29,067	6,654	29	29.0
Dec.	10,362	33,732	34,356	9,738	30	23.5
1997						
Jan.	7,613	29,099	29,993	6,720	29	20.7
Feb.	11,687	20,289	25,945	6,031	27	36.5
Mar.	18,153	10,850	21,908	7,095	30	62.6
Apr.	17,172	15,757	25,925	7,004	29	52.1
May	19,122	24,305	36,764	6,663	30	44.0
Jun.	17,926	31,587	42,326	7,187	30	36.2
Jul.	15,450	40,815	50,102	6,164	30	27.5
Aug.	14,551	38,899	46,183	7,267	28	27.2
Sep.	6,709	19,458	22,887	3,280	15	25.6
Oct.	na	na	na	na	na	na
Nov.	na	na	na	na	na	na
Dec.	na	na	na	na	na	na
1996						
Sep.	15,833	35,228	44,467	6,595	29	31.0
Oct.	13,913	29,792	36,707	6,999	28	31.8
Nov.	11,877	22,841	27,585	7,134	29	34.2
Dec.	9,047	28,913	29,304	8,656	30	23.8

Source: Southwest Technology Development Institute
Utah Energy Office

Table 6.11 **Energy Saving Systems Tax Credit in Utah, 1980-2002 (as of Sept. 2003)**

Residential Sector

Year	Total Received	Total Approved	Total Amount Approved	Average per Credit	Total Equipment and Installation Cost	# of Solar Units				# of Wind Units	# of Hydro Units	# for Primary Residence	# for Secondary Residence	# for Apartment complexes
			Dollars	Dollars	Dollars	PV	Thermal	Passive	Total					
1980	307	304	150,811	496	1,650,362	na	na	na	na	na	na	na	na	na
1981	557	550	288,298	524	3,105,065	na	na	na	na	na	na	na	na	na
1982	923	913	151,335	166	5,543,112	na	na	na	na	na	na	na	na	na
1983	785	749	460,401	615	4,854,242	na	na	na	na	na	na	na	na	na
1984	925	908	531,140	585	5,759,879	na	na	na	na	na	na	na	na	na
1985	484	475	248,408	523	2,703,495	na	na	na	na	na	na	na	na	na
1986	124	124	144,851	1,168	764,534	na	na	na	na	na	na	na	na	na
1987	34	34	34,219	1,006	164,165	na	na	na	na	na	na	na	na	na
1988	14	14	12,475	891	62,810	na	na	na	na	na	na	na	na	na
1989	17	17	16,291	958	72,231	na	na	na	na	na	na	na	na	na
1990	29	29	30,608	1,055	178,804	na	na	na	na	na	na	na	na	na
1991	22	22	16,361	744	69,777	na	na	na	na	na	na	na	na	na
1992	25	25	16,795	672	67,177	na	na	na	na	na	na	na	na	na
1993	17	17	14,024	825	71,564	na	na	na	na	na	na	na	na	na
1994	27	27	28,475	1,055	132,885	4	15	6	25	2	0	22	5	0
1995	17	17	16,551	974	73,195	2	12	3	17	0	0	15	2	0
1996	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1997	19	16	22,559	1,410	133,932	11	4	1	16	0	0	10	6	0
1998	24	20	29,255	1,463	142,958	17	1	3	21	2	0	14	6	0
1999	62	59	81,656	1,384	493,388	54	5	2	61	15	0	36	22	1
2000	53	51	64,410	1,263	628,906	44	3	4	51	11	1	28	23	0
2001	32	30	42,755	1,425	230,406	25	5	1	31	1	0	15	15	0
2002	58	56	75,193	1,343	476,121	36	17	6	59	6	0	30	25	1
2003*	4	3	4,336	1,445	33,057	2	1	0	3	0	0	3	0	0
Total	4,559	4,460	2,481,207	21,990	27,412,066	195	63	26	284	37	1	173	104	2

Table 6.11 Cont.

Commercial Sector

Year	Total Received	Total Approved	Total Amount Approved	Average per Credit	Total Equipment Cost	# of Solar Units (PV)	# of Wind Units	# of Hydro Units
			Dollars	Dollars	Dollars			
1980	3	3	2,432	811	24,322	na	na	na
1981	3	3	4,083	1,361	40,830	na	na	na
1982	6	5	8,051	1,610	83,850	na	na	na
1983	12	11	22,326	2,030	282,348	na	na	na
1984	16	16	33,711	2,107	508,186	na	na	na
1985	3	3	3,220	1,073	32,200	na	na	na
1986	4	4	9,793	2,448	97,925	na	na	na
1987	0	0	0	0	0	na	na	na
1988	0	0	0	0	0	na	na	na
1989	2	2	9,733	4,867	97,335	na	na	na
1990	1	1	4,088	4,088	40,879	na	na	na
1991	0	0	0	0	0	na	na	na
1992	2	2	3,347	1,673	33,466	na	na	na
1993	0	0	0	0	0	na	na	na
1994	na	1	11,290	11,290	112,898	0	0	1
1995	na	0	0	0	0	0	0	0
1996	--	--	--	--	--	--	--	--
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	1	1	929	929	3,717	1	0	0
2000	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0
2002	1	1	1,016	1,016	10,157	1	1	0
2003*	0	0	0	0	0	0	0	0
Total	54	53	114,019	35,303	1,368,113	2	1	1

Source: Utah Energy Office

*As of Sept. 2003

Notes: **Residential**

1980-June 1985; tax credit was 10% with a $1,000 limit
July 1986 - 1995; tax credit was 25% with a $1,500 limit
1997-present; tax credit is 25% with a $2,000 limit

Commercial

1980-June 1985; tax credit was 10% with a $3,000 limit
July 1986 - 1995; tax credit was 10% with a $25,000 limit
1997-present; tax credit is 10% with a $50,000 limit

The renewable energy tax credit did not exist in 1996.