

3.6 – Green Power Markets

There are three distinct markets for green power in the United States. In regulated markets, a single utility may provide a green power option to its customers through “green pricing,” which is an optional service or tariff offered to customers. These utilities include investor-owned utilities, rural electric cooperatives, and other publicly owned utilities. More than 600 utilities in 34 states offer green pricing, or are in the process of preparing programs.

In restructured (or competitive) electricity markets, retail electricity customers can choose from among multiple electricity suppliers, some of which may offer green power. Electricity markets are now open to full competition in a number of states, while others are phasing in competition.

Finally, consumers can purchase green power through “renewable energy certificates.” These certificates represent the environmental attributes of renewable energy generation and can be sold to customers in either type of market, whether or not they already have access to a green power product from their existing retail power provider.

Utility market research shows that majorities of customer respondents are likely to state that they would pay at least \$5 more per month for renewable energy. And business and other nonresidential customers, including colleges and universities, and government entities are increasingly interested in green power.

Customers

At the end of 2004, more than 500,000 electricity customers nationally were purchasing green power products through regulated utility companies, from green power marketers in a competitive market setting, or in the form of RECs (**Table 3.6.1**). In aggregate, utility green pricing programs have shown steady growth in customers over time as the number of utility programs has increased and as existing programs have grown. On the other hand, competitive markets have been less consistent. While green power sales have grown in Texas and some Northeast states, other markets have failed altogether—most notably in California and Connecticut. While REC customers represent a small fraction of the total customer base, REC sales have increased dramatically because of a number of very large purchases.

Average participation rates among utility green pricing programs have remained steady at just more than 1%, although the top performing utility green pricing programs have achieved rates ranging from 4% to 15%. Competitive markets have experienced penetration rates of from 1% to 2% in states where the market has been conducive to retail competition.

Table 3.6.1: Estimated Green Power Customers by Market Segment

	2000	2001	2002	2003	2004
Utility Green Pricing	130,000*	170,000*	230,000*	270,000	330,000
Competitive Markets	>160,000**	>110,000**	~150,000	>150,000	>180,000
REC Markets	--	--	< 10,000	< 10,000	< 10,000
Retail Total	>290,000	>280,000	~390,000	~430,000	~520,000

* Annual program participant numbers have been adjusted downward from those originally reported in Bird and Swezey (2003), because of program participation revisions made by the Los Angeles Department of Water and Power.

** Includes only customers purchasing Green-e certified green power products, as reported by the Center for Resource Solutions (2001; 2002).

Sales

Retail sales of renewable energy in voluntary purchase markets experienced strong growth in 2004, increasing more than 60% to 6.2 billion kWh annually. This includes sales of renewable energy derived from both new and preexisting renewable energy sources. REC sales nearly tripled, while sales through utility green pricing programs and competitive marketers also exhibited strong annual growth of about 40%.

Table 3.6.2: Estimated Green Power Sales by Market Segment (million kWh)

	2003	2004	Increase
Utility Green Pricing	1,280	1,840	43%
Competitive Markets	1,900	2,650	40%
REC Markets	660	1,720	162%
Retail Total	3,840	6,210	62%

*Includes sales of new and existing renewable energy.

Purchases by residential customers represent slightly more than half of total renewable energy sales in voluntary markets. In 2004, nonresidential customers accounted for 30% and 20% of total renewable energy sales in green pricing programs and competitive markets, respectively, and nearly all REC sales.

Since 2000, the amount of renewable energy capacity serving green power markets has increased more than tenfold. At the end of 2004, more than 2,200 MW of new renewable energy generation capacity was being used to supply green power markets, with another 450 MW planned.

**Table 3.6.3: Estimated Green Power Sales by Customer Segment, 2004
(million kWh)**

	Green Pricing	Competitive Markets	REC Markets	Total	Share
Residential	1,300	2,140	40	3,480	56%
Nonresidential	540	510	1,690	2,740	44%
Total	1,840	2,650	1,720	6,210	100%

Totals may not add due to rounding.

Table 3.6.4: Estimated New Renewables Capacity Supplying Green Power Markets, 2000-2004 (megawatts)

Market	2000	2001	2002	2003	2004
Utility Green Pricing	77	221	279	510	706
Competitive Markets/RECs	90	542	695	1,126	1,528
Total	167	764	974	1,636	2,233

Totals may not add due to rounding.

Source: Bird and Swezey (2005).

Table 3.6.5: New Renewables Capacity Supplying Green Power Markets, 2004

Source	MW in Place	%	MW Planned	%
Wind	2,045.6	91.6	364.5	80.1
Biomass	135.6	6.1	58.8	12.9
Solar	8.1	0.4	0.4	0.1
Geothermal	35.5	1.6	0.0	0.0
Small Hydro	8.5	0.4	31.3	6.9
Total	2,233.3	100.0	455.0	100.0

Source: L. Bird and B. Swezey, Estimates of New Renewable Energy Capacity Serving U.S. Green Power Markets (2004), National Renewable Energy Laboratory, September 2005. http://www.eere.energy.gov/greenpower/resources/tables/new_gp_cap.shtml