

Green Power Marketing in the United States: A Status Report (Tenth Edition)

Lori Bird, Leila Dagher, and Blair Swezey

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December 2007

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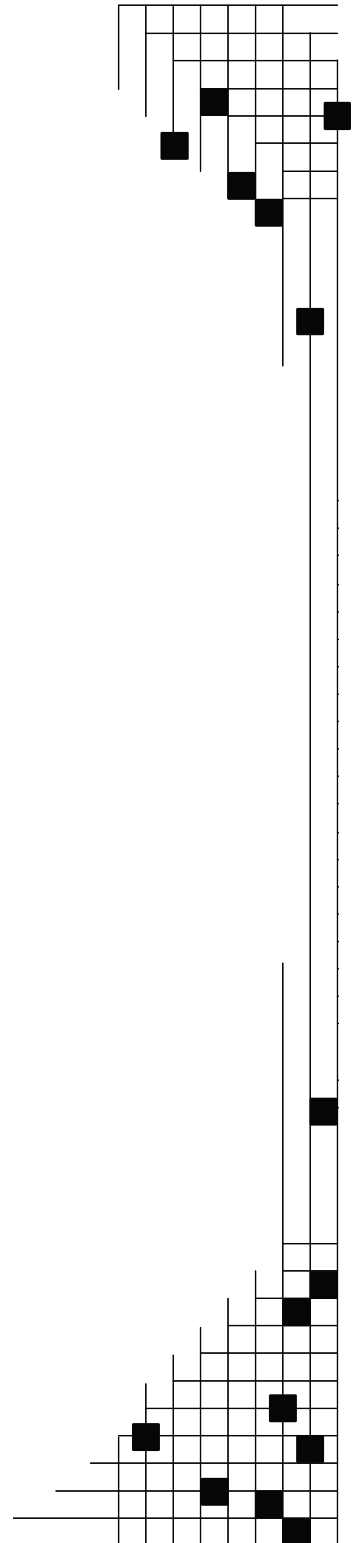
Lori Bird, Leila Dagher, and Blair Swezey

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Introduction

Voluntary consumer decisions to purchase electricity supplied from renewable energy sources represent a powerful market support mechanism for renewable energy development. Beginning in the early 1990s, a small number of U.S. utilities began offering “green power” options to their customers.¹ Since then, these products have become more prevalent, both from traditional utilities and from marketers operating in states that have introduced competition into their retail electricity markets. Today, more than half of all U.S. electricity customers have an option to purchase some type of green power product from a retail electricity provider.

Currently, more than 750 utilities, or about 25% of utilities nationally, offer green power programs to customers. These programs allow customers to purchase some portion of their power supply as renewable energy—almost always at a higher price—or to contribute funds for the utility to invest in renewable energy development. The term “green pricing” is typically used to refer to these utility programs offered in regulated or noncompetitive electricity markets.

In states with competitive (or restructured) retail electricity markets, electricity customers can often purchase electricity generated from renewable sources by switching to an alternative electricity supplier that offers green power. In some of these states, default utility electricity suppliers offer green power options to their customers in conjunction with competitive green power marketers.² To date, nearly a dozen states that have opened their markets to retail competition have experienced some green power marketing activity. Through the combination of utility green pricing and competitive retail markets, green power is available to most electricity customers living in 46 out of the 50 U.S. states (Figure 1).

Finally, regardless of whether they have access to a green power product from their retail power provider, any consumer can purchase green power through renewable energy certificates (RECs), which represent the “attributes” of electricity generated from renewable energy-based projects. Consumers in competitive markets can also support renewable energy development through REC purchases without having to switch to an alternative electricity supplier. Today, several dozen companies actively market RECs to residential or business customers throughout the United States.

This report documents green power marketing activities and trends in the United States. First, we present aggregate green power sales data for all voluntary purchase markets across the United States. The next two sections provide summary data on 1) utility green pricing programs offered in regulated electricity markets and 2) green power marketing activity in competitive electricity markets as well as green power sold to voluntary purchasers in the form of RECs. These are followed by a discussion of key market trends and issues. The final section offers conclusions

¹ The term “green power” generally refers to electricity supplied in whole or in part from renewable energy sources, such as wind and solar power, geothermal, hydropower, and various forms of biomass.

² Under these programs, consumers can purchase renewable energy from independent renewable energy marketing companies without switching their electricity service from the default or standard offer service provider.

and observations. The data presented in this report are based on figures provided to NREL by utilities and independent renewable energy marketers.³

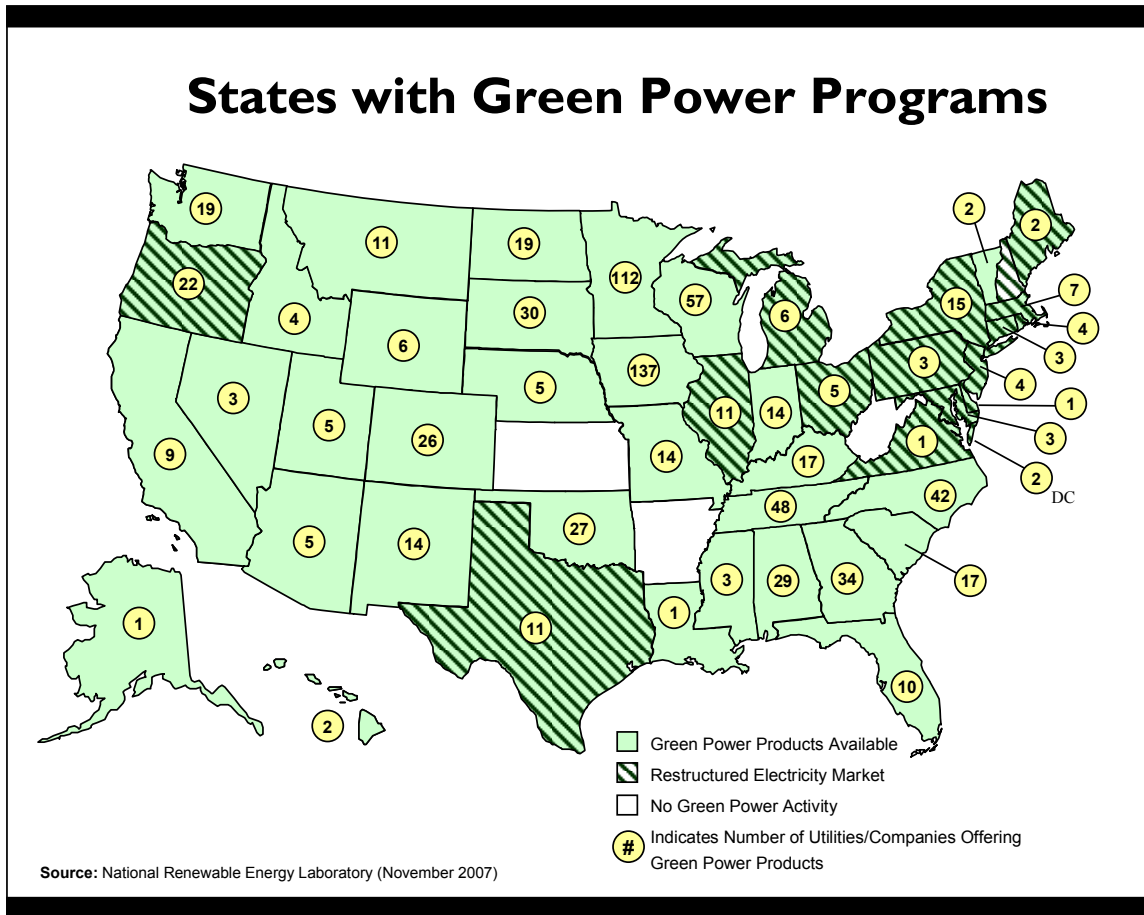


Figure 1. States with green power programs

³ Green power market data for previous years are available in Bird and Swezey (2006), Bird and Swezey (2005a), Bird and Swezey (2004), Bird and Swezey (2003), Swezey and Bird (2000), Swezey and Bird (1999).

Green Power Market Summary and Trends

Green Power Sales

Overall, retail sales of renewable energy in voluntary purchase markets totaled about 12 billion kilowatt-hours (kWh) in 2006, or about 0.3% of total U.S. electricity sales.⁴ This includes sales of renewable energy derived from both “new” and “existing” renewable energy sources, with most sales supplied from new sources.⁵ Wind energy provided 62% of green power sales, followed by biomass energy sources, including landfill gas (23%), geothermal (7%), hydropower (6%), and solar (1%) (Figure 2). Based on the sales data presented in this report, we estimate the market value of green power sales in 2006 to be from \$65 million to \$85 million.

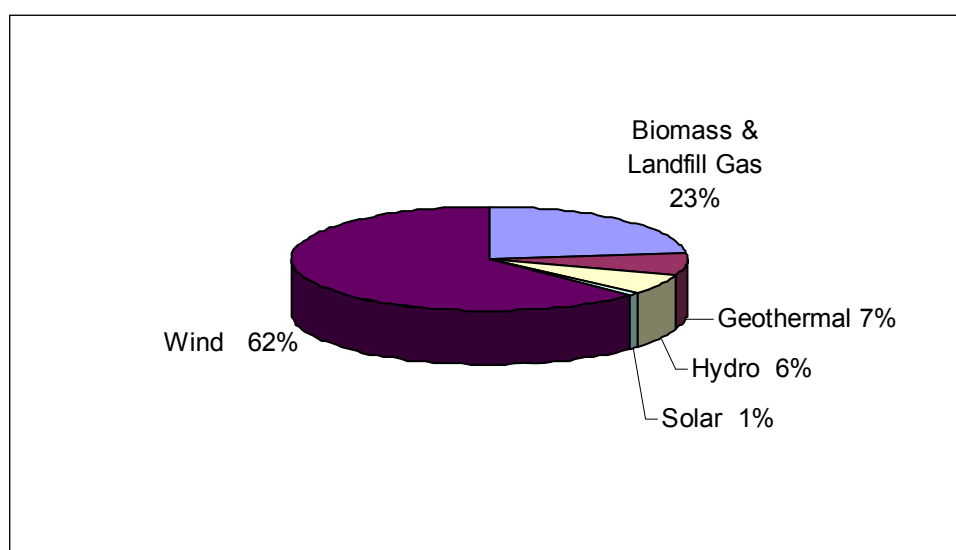


Figure 2. Estimated green power sales by renewable energy source, 2006

Green power sales increased by about 40% by volume in 2006, with annual growth rates averaging 46% since 2003 (Table 1). REC sales have been driving much of the growth, increasing 75% in 2006, after more than doubling in 2005. Sales through utility green pricing programs also exhibited strong annual growth of nearly 40%.⁶ However, sales in competitive

⁴ U.S. electricity sales totaled 3,670 billion kWh in 2006, according to the U.S. Energy Information Administration (EIA). See <http://www.eia.doe.gov/cneaf/electricity/epa/epat7p2.html>. The remaining renewable energy generation is rate-based by utilities or used to meet renewable portfolio standards.

⁵ With green power, a distinction is often made based on the vintage of the renewable energy generator. The green power industry generally follows the *Green-e* national standard, which defines a “new” renewable generation facility as one placed in operation or repowered on or after January 1, 1997. An “existing” generation facility, therefore, is one placed in service before January 1, 1997. For more information on the *Green-e* national standard, see http://www.green-e.org/ipp/national_standard.html.

⁶ The REC sales figures reflect sales to end use customers separate from electricity. RECs bundled with electricity and sold to end-use customers through utility green pricing programs or in competitive electricity markets are counted in these other categories.

markets fell by 20%, because rising costs associated with supplying customers with renewable electricity service caused some marketers to lose or turn back customers to default service (see the competitive markets discussion). REC markets now represent more than half of industry sales, replacing competitive markets as the dominant market sector.

Sales to nonresidential customers continued to outpace those to residential consumers, with nearly three-quarters of all sales by volume to the nonresidential sector in 2006 (Table 2). Although renewable energy sales to residential customers through utility green pricing programs increased by about 30% in 2006, losses in some competitive markets, such as Pennsylvania, led to a modest overall increase in residential sales. Nearly all REC sales were to nonresidential customers, while residential customers played a larger role in green pricing programs and competitive markets, where they accounted for nearly 60% of renewable energy sales (Table 3).

Table 1. Estimated Annual Green Power Sales by Market Sector, 2003-2006*
(millions of kWh)

Market Sector	2003	2004	2005	2006	% Change 2003/2004	% Change 2004/2005	% Change 2005/2006
Utility Green Pricing	1,300	1,800	2,500	3,400	44%	33%	39%
Competitive Markets	1,900	2,700	2,200	1,700	39%	-19%	-20%
REC Markets**	660	1,700	3,900	6,800	161%	126%	75%
Retail Total	3,800	6,200	8,500	11,900	62%	37%	41%

*Includes sales of new and existing renewable energy. Totals and growth rates may not calculate due to rounding.

**Includes only RECs sold to end-use customers separate from electricity. RECs are often purchased wholesale to supply utility and competitively marketed products and bundled with electricity. RECs bundled with electricity are included in utility green pricing and competitive market sales estimates.

Table 2. Estimated Annual Green Power Sales by Customer Segment, 2004-2006*
(millions of kWh)

Customer Segment	2004	2005	2006	% Change 2004/2005	% Change 2005/2006
Residential	3,500	3,000	3,200	-14%	8%
Nonresidential	2,700	5,500	8,700	101%	58%
Total	6,200	8,500	11,900	37%	41%
% Nonresidential	44%	65%	73%	--	

*Totals and growth rates may not compute due to rounding.

At the end of 2006, kWh-sales of renewable energy in voluntary markets represented a generating capacity equivalent of about 3,500 MW, with about 3,100 MW of that from “new” renewable energy sources (Table 4). Since 2000, the amount of renewable energy capacity serving green power markets has increased nearly 20-fold (see Appendix A).

**Table 3. Estimated Annual Green Power Sales by Customer Segment and Market Sector, 2006
(millions of kWh)**

Customer Segment	Green Pricing	Competitive Markets	REC Markets	Total
Residential	2,100	1,000	100	3,200
Nonresidential	1,300	700	6,700	8,700
Total	3,400	1,700	6,800	11,900
% Residential	62%	58%	2%	27%

Note: Totals may not add due to rounding.

Table 4. Estimated Cumulative Renewable Energy Capacity Supplying Green Power Markets, 2005-2006 (megawatts)

Market	2005 Total Renewables Capacity	2005 "New" Renewables Capacity	2006 Total Renewables Capacity	2006 "New" Renewables Capacity
Utility Green Pricing	800	700	1,100	1,000
Competitive Markets/RECs	1,700	1,300	2,400	2,100
Total	2,500	2,000	3,500	3,100

Note: "New" renewables capacity is a subset of total renewables capacity supplying green power markets.

Based on data from EIA, NREL estimates that about 10,650 MW of "new" renewable energy capacity was installed in the United States between 1997 and the end of 2006; thus, voluntary green power markets provide support for nearly 30% of "new" renewable energy capacity additions nationally.⁷ Much of the remaining renewable energy generation from recent capacity additions is used for compliance with state renewable portfolio standards or other policy mandates, separate from voluntary green power markets.

Customer Participation

In 2006, an estimated 700,000 electricity customers nationally purchased green power products through regulated utility companies, from green power marketers in a competitive market setting, or in the form of RECs (Table 5).⁸ In aggregate, utility green pricing programs have shown

⁷ Based on data from EIA, NREL estimates that 10,650 MW of new renewable energy capacity (excluding large hydropower) came online from 1997 through 2006. The methodology for calculating new renewable energy supply is presented in Swezey et al. 2007 <http://www.eere.energy.gov/greenpower/pdfs/42266.pdf>.

⁸ It is important to note that there is greater uncertainty in our customer estimates for competitive and REC markets because of data limitations. For more detailed estimates by state for 2004 and 2005, see data from U.S. EIA 2007 in Appendix C. Generally, our estimates are consistent with the EIA estimates when adjusted for customers in Ohio who participate in community aggregations. We exclude these customers from our estimates because they purchase products with very low renewable energy content (1% to 2%).

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—notably in California, Connecticut, and most recently, Pennsylvania. While REC customers represent a small fraction of the total customer base, REC sales represent more than half of all green power sales and have grown dramatically in recent years as a result of a number of very large purchases (see Appendix B for a list of top green power purchasers).

Table 5. Estimated Cumulative Green Power Customers by Market Segment, 2000-2005

	2000	2001	2002	2003	2004	2005	2006
Utility Green Pricing	130,000	170,000	230,000	270,000	330,000	390,000	490,000
Competitive Markets	>160,000	>110,000	~150,000	>170,000	>140,000	>180,000	~210,000
REC Markets*	--	--	< 10,000	< 10,000	< 10,000	< 10,000	~10,000
Retail Total	>290,000	>280,000	~390,000	~450,000	~480,000	~580,000	~710,000
% Change	n/a	~-3%	~39%	~15%	~7%	~21%	~22%

Note: In some cases, estimates have been revised from those reported in previous NREL reports as updated data have become available.

*Includes only end-use customers purchasing RECs separate from electricity.

Average participation rates among utility green pricing programs increased slightly to 1.8% in 2006, with a median value of 1.0%; top performing programs have achieved rates ranging from 5% to 17%. Competitive markets have experienced green power customer penetration rates ranging from 1% to 2% in states where the market has been conducive to retail competition.

Utility Green Pricing Programs

The number of utilities offering green pricing has grown steadily in recent years—today, more than 750 investor-owned, public, and cooperative utilities in 38 states offer green pricing programs (Figure 3). Appendix D provides a list of utilities offering green pricing while Appendix E provides detailed program information.⁹ Because a number of small municipal or cooperative utilities offer programs developed by their power suppliers, the number of distinct green pricing programs is about 150. Initially, some portion of the growth in utility green power offerings was attributable to the threat of retail market competition, while more recent growth has been spurred by state laws requiring utilities to offer green pricing.¹⁰ In addition, a number of utilities have expanded their programs as customer demand has grown.

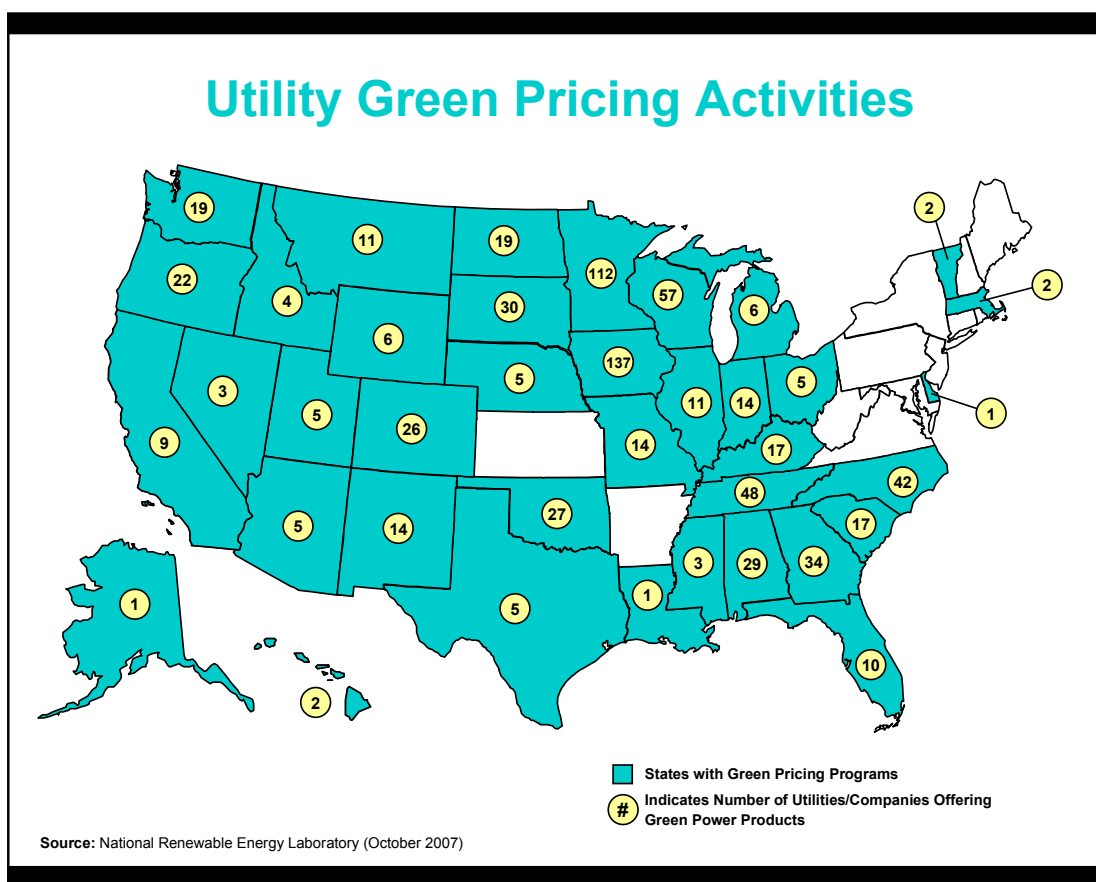


Figure 3. Utility green pricing activities

⁹ For an up-to-date list of utilities with green pricing programs, see the U.S. Department of Energy’s Green Power Network Web site at <http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=1>.

¹⁰ These states include Iowa, Minnesota, Montana, New Mexico, Oregon, and Washington.

Products and Pricing

Typically, green pricing programs are structured so that customers can either purchase green power for a certain percentage of their electricity use (often called “percent-of-use products”) or in discrete amounts or blocks at a fixed price (“block products”), such as a 100-kWh block. Most utilities offer block products but may also allow customers to purchase green power for their entire monthly electricity use. Utilities that offer percent-of-use products generally allow residential customers to elect to purchase 25%, 50%, or 100% of their electricity use as renewable energy, while a few offer fractions as small as 10%. Under these types of programs, larger purchasers, such as businesses, can often purchase green power for a smaller fraction of their electricity use.

In 2006, price differentials for energy-based programs ranged from -0.13¢/kWh (a discount) to 17.6¢/kWh, with an average premium of 2.1¢/kWh and a median of 1.8¢/kWh (Table 6). These premiums have been adjusted to account for any fuel cost exemptions granted to green power program participants.¹¹ Programs that feature solar-based products represent the high end of the range.

Since 2000, the average price premium has dropped at an average annual rate of 8% (Figure 4). Some of this reduction can be attributed to lower market costs for renewable energy supplies. Increases in the price of natural gas have narrowed the price gap between renewables and gas-fired generation alternatives, leading to lower initial premiums for many new programs; however, they have also reduced the effective premiums in programs that exempt participating customers from fuel-related price increases. In addition, a number of utilities have lowered their premiums over time to reflect changing market conditions. Despite the downward trend in premiums, installation costs are increasing for new renewable energy facilities, largely as a result of rising commodity prices, which may affect premiums in coming years.

Table 6. Price Premiums of Utility Green Power Products (¢/kWh)

	2000	2001	2002	2003	2004	2005	2006
Average Premium	3.48	2.93	2.82	2.62	2.45	2.36	2.12
Median Premium	2.50	2.50	2.50	2.00	2.00	2.00	1.78
Range of Premiums	(0.5)-20.0	0.9-17.6	0.7-17.6	0.6-17.6	0.3 - 17.6	(0.7)-17.6	(0.1)-17.6
10 Programs with Lowest Premiums*	(0.5)-2.5	1.0-1.5	0.7-1.5	0.6-1.3	0.3-1.0	(0.7)- 0.9	(0.1)-1.0
Number of Programs Represented	50	60	80	91	101	104	97

*Represents the 10 utility programs with the lowest price premiums for new customer-driven renewable energy. This includes only programs that have installed—or announced firm plans to install or purchase power from—new renewable energy sources. In 2001, the discrepancy between the low end of the range for all programs and the Top 10 programs results from the program with the lowest premium (0.9¢/kWh) not being eligible for the Top 10 because it was either selling some existing renewables or had not installed any “new” renewable capacity for its program. Source: Bird and Kaiser (2007)

¹¹ Some utilities periodically adjust the green power premium to reflect changes in the cost of fossil fuels used for electricity generation. Other utilities offer a fixed-rate green power product. In either case, when fuel prices increase, the effective green power premium falls. Utilities offering fixed-rate green power options or other types of fuel-price exemptions include Austin Energy, Alliant Energy, Clallum County PUD, Edmond Electric, Eugene Water and Electric Board, Green Mountain Power, Holy Cross Energy, Madison Gas & Electric, OG&E Electric Services, We Energies, and Xcel Energy.

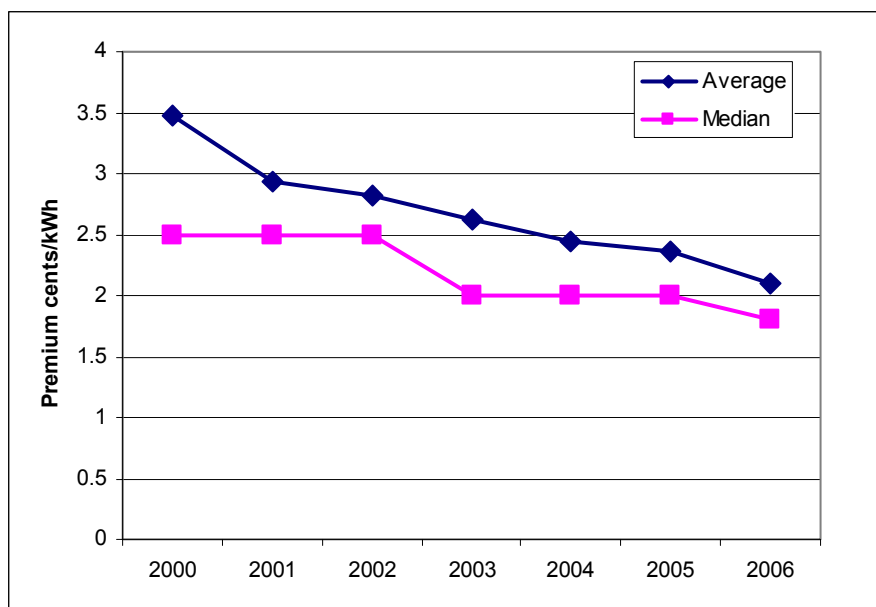


Figure 4. Trend in utility green pricing premiums, 2000–2006

Green Pricing Sales

Utility green pricing sales continue to exhibit strong growth. Collectively, utilities in regulated electricity markets sold about 3.4 billion kWh of green power to customers in 2006 (Table 7). Green pricing program sales to all customer classes grew by 39% in 2006, compared to rates ranging from 26% to 56% in recent years (Table 7; Figure 5). Sales growth is attributed to both continued expansion of the green power customer base as well as larger purchases by nonresidential customers.

Table 7. Annual Sales of Green Energy Through Utility Green Pricing Programs (Regulated Electricity Markets Only), millions of kWh

	2001	2002	2003	2004	2005	2006
Sales to Residential customers	400	661	874	1,295	1,606	2,103
Sales to Nonresidential customers	173	234	410	544	842	1,302
Total Sales to All customers	573	895	1,284	1,839	2,448	3,404
% Annual Growth in Total Sales	26%	56%	43%	43%	33%	39%
% Nonresidential of Total Sales	30%	26%	32%	30%	34%	38%

Totals may not add due to rounding.
Source: Bird and Kaiser (2007)

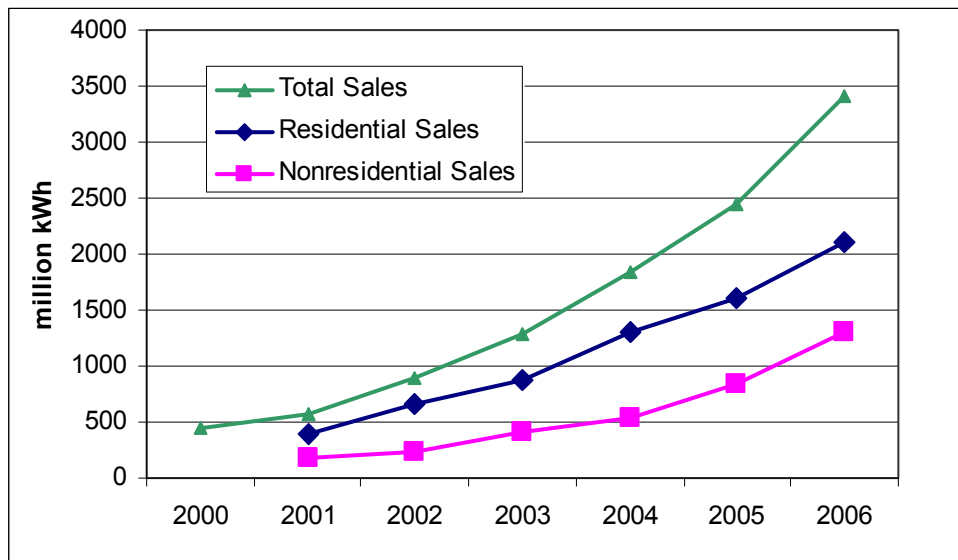


Figure 5. Annual sales of green energy through utility green pricing programs (regulated electricity markets only), millions of kWh

Renewable energy sold through green pricing programs in 2006 represents an equivalent renewable energy capacity of more than 1,100 MW, with more than 1,000 MW of this represented by “new” renewable energy resources (Table 8).¹² Wind, solar, and landfill gas are the renewable resources most commonly used for utility programs, with wind energy representing the largest portion of the total capacity. In 2005, sales of renewable energy through green pricing programs represented nearly 800 MW of renewable energy capacity, with about 740 MW of that from “new” renewable energy sources. Appendix A presents estimates of new capacity serving green pricing programs in earlier years.

Table 8. Renewable Energy Generation and Capacity Supplying Green Pricing Programs, 2006

	Landfill Gas	Other Bio	Geothermal	Hydro	Solar	Wind	Total
Sales MWh	321,000	201,000	89,000	146,000	7,200	2,641,000	3,404,000
% of Total Sales	9.4%	5.9%	2.6%	4.3%	0.2%	77.6%	100.0%
Capacity Factor*	0.9	0.8	0.9	0.5	0.2	0.3	
Total MW	41	29	11	33	4	1,004	1,123
MW New RE**	27	16	<1	5	4	992	1,044

*Capacity factors are derived from EPRI/DOE 1997 and EIA 2006 to reflect a blend of technologies installed over time and in areas with varying resource quality.

**“New” renewables capacity is a subset of total capacity supplying green pricing programs.

¹² Capacity factors are derived from EPRI and U.S. DOE *Renewable Energy Technology Characterizations*, TR-109496, December 1997.

Customer Participation

At the end of 2006, more than 480,000 customers were participating in utility green pricing programs in regulated electricity markets (Table 9).¹³ As in the past, a relatively small number of green power programs account for the majority of customers, with just 10 programs accounting for 60% of all participants.¹⁴ From 2000 to 2006, the number of customer participants increased nearly fourfold, with growth rates during the past several years ranging from 16% to 25%.

Table 9. Estimated Cumulative Number of Customers Participating in Utility Green Pricing Programs

Customer Segment	2000	2001	2002	2003	2004	2005	2006
Residential	131,000	166,300	224,500	258,700	323,700	383,400	470,800
Nonresidential	1,700	2,500	3,900	6,500	8,100	11,300	15,500
Total	132,700	168,800	228,400	265,000	331,800	394,700	486,300
% Total Annual Growth	98%	27%	35%	16%	25%	19%	23%
% Residential Growth	n/a	27%	35%	15%	25%	18%	23%
% Nonresidential Growth	n/a	47%	56%	67%	25%	40%	37%

Source: Bird and Kaiser 2007

Table 9 delineates residential and nonresidential customer participation in utility green pricing programs over time. The vast majority of participants are residential customers, with nonresidential customers accounting for only 3% of all participants. However, nonresidential participation is growing at a faster rate than residential participation, which is having a significant positive impact on overall sales volume because of the larger size of nonresidential purchases.

At the end of 2006, the average participation rate in utility green pricing programs among eligible utility customers was 1.8%, with a median of 1% (Table 10). These industry-wide rates have shown very little change in recent years. The overall lack of improvement in participation rates results from a number of factors, including a lack of customer awareness of the green power program,¹⁵ customer unwillingness to pay a premium for green power, customer uncertainty regarding the actual benefits of the program, and varied levels of interest among utilities in marketing and promoting the program (Holt and Holt 2004, Swezey and Bird 2001). However, the top performing programs continue to show improvement, with participation rates ranging from about 5% to nearly 17% in 2006, compared to a range of 3% to 6% in 2002.

¹³ NREL obtained consumer response data for nearly 70% of utility green pricing programs in 2006, including all of the major programs. The remaining programs, which are smaller in size, do not have a large impact on overall participant numbers.

¹⁴ NREL issues four different Top 10 lists based on total sales of renewable energy to program participants, total number of customer participants, customer participation rates, and the premium charged to support new renewables development. These lists can be found at <http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=3>.

¹⁵ A number of utilities have reported that only 20% to 30% of their customers are aware that a green power option is offered.

Table 10. Customer Participation Rates in Utility Green Pricing Programs

Participation Rate	2000	2001	2002	2003	2004	2005	2006
Average	1.2%	1.3%	1.2%	1.2%	1.3%	1.5%	1.8%
Median	0.7%	0.7%	0.8%	0.9%	1.0%	1.0%	1.0%
Top 10 programs	2.6%- 7.3%	3.0%- 7.0%	3.0%- 5.8%	3.9%- 11.1%	3.8%- 14.5%	4.6%- 13.6%	5.1%- 16.9%

In 2006, utilities reported that an average of 6% and a median 4% of customers dropped out of green pricing programs. Thus, retention rates continue to improve, despite the fact that electricity and energy prices have remained high in most regions of the country. This finding suggests that customers tend to be “sticky” and maintain participation in green power programs, despite electricity and other energy cost increases (Bird and Kaiser 2007).

Competitive Green Power and REC Markets

About one-third of U.S. states have restructured their electricity markets to introduce retail service competition. Currently, electricity consumers in the following states can purchase competitively marketed green power: Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island, Texas, and Virginia, as well as the District of Columbia (Figure 6 and Appendix F).^{16,17} Competitively marketed green power offerings are also available to nonresidential consumers in a few other states.

Initially, buying green power in competitive retail markets entailed switching electricity service from the incumbent utility to a green power supplier. However, with few exceptions, green power marketers have found it difficult to compete or to persuade customers to switch suppliers. As a remedy, a number of states now require default suppliers (which are often the incumbent distribution utilities) to offer green power options to their customers. These load serving entities typically provide customers with underlying electricity generation, combined with a choice of several green products offered by competing green power marketers. In addition, several utility suppliers have voluntarily teamed with a single green power marketer to offer a green power option to their customers. Utility/marketer partnership programs are now offered in Connecticut, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island.

RECs provide another alternative to switching electricity suppliers. Also known as “green tags” or tradable renewable certificates (TRCs), RECs represent the “green” attributes of renewable energy generation and can be sold separately from commodity electricity. REC-based products may be supplied from a variety of renewable energy sources throughout the country and sold to customers nationally, or they may be supplied from renewable energy sources in a particular region or locality and marketed as such to local customers. More than 20 companies offer certificate-based green power products to retail customers via the Internet, and a number of other companies market RECs solely to commercial and industrial customers (Appendix G).¹⁸

RECs are also sold in the wholesale market and are frequently used by utilities and marketers who bundle the RECs with commodity electricity to sell green power to retail customers. In fact, RECs are used to supply most of the programs in which default suppliers have teamed with green power marketers. Thus, it can be difficult to distinguish REC products from other green power offerings. This is particularly true when REC products are supplied from renewable sources located in the same region in which they are marketed.

¹⁶ For an up-to-date list of products offered by competitive green power marketers, see the U.S. Department of Energy’s Green Power Network Web site at

<http://www.eere.energy.gov/greenpower/markets/marketing.shtml?page=1>

¹⁷ We do not include Oregon and Ohio in this list. In Oregon, only large commercial and industrial customers are able to switch to competitive green power providers; residential and small commercial customers have access to green power options offered by the incumbent utilities, which we categorize as green pricing. In Ohio, at least one green power marketer supplied customers of municipal aggregation groups with a “cleaner energy” product, but the renewable energy content was very low (this offering was terminated at the end of 2005). Green power is not offered more broadly in the Ohio market.

¹⁸ For an up-to-date list of companies offering REC-based green power products, see the U.S. Department of Energy’s Green Power Network Web site at:

<http://www.eere.energy.gov/greenpower/markets/certificates.shtml?page=1>

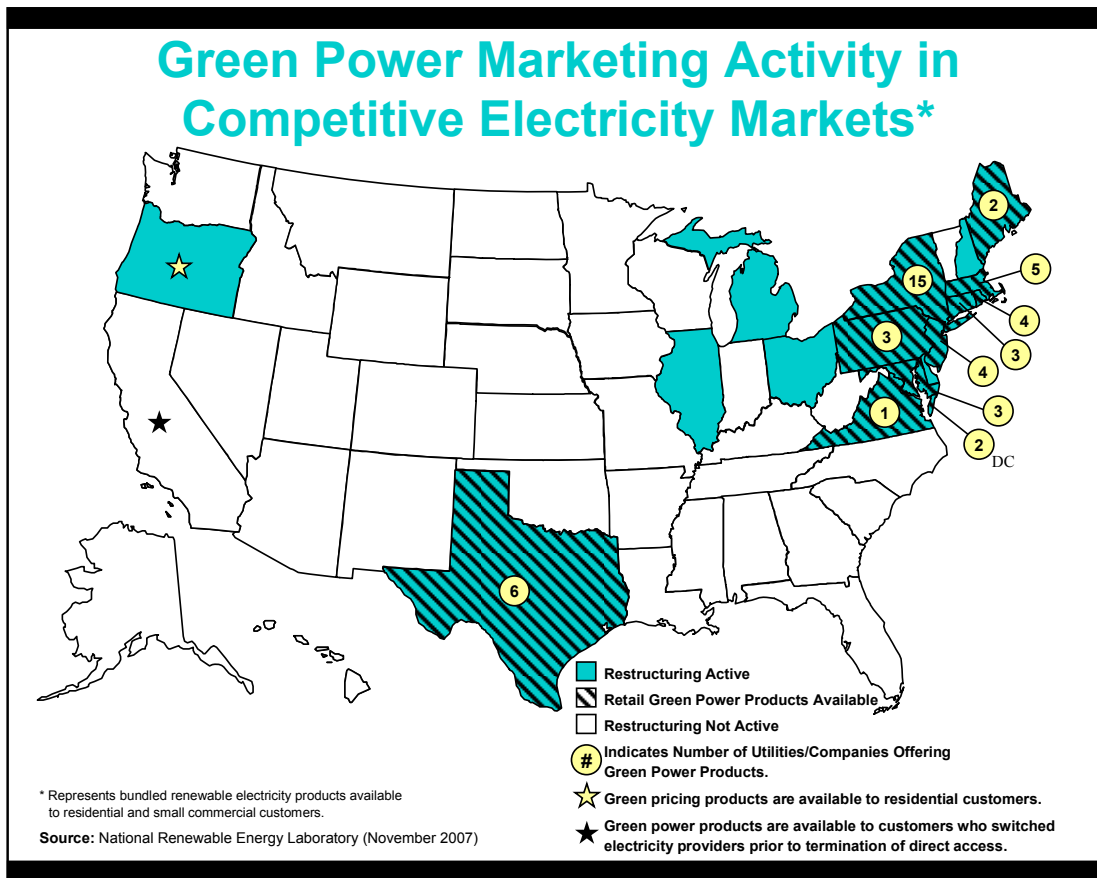


Figure 6. Green power marketing activity in competitive electricity markets

Products and Pricing

Green power products offered in competitive markets tend to differ from those offered by utilities in regulated markets in that they may contain a mix of electricity generated from new and preexisting renewable energy projects, whereas utility green pricing programs generally utilize only “new” renewable energy supplies. One reason for this difference is that competitive suppliers are subject to price competition, and existing resources are typically available at lower costs. Also, when markets initially opened to competition, green power marketers often were forced to offer existing renewables because of a lack of “new” renewable energy supplies. However, as new renewable energy facilities have come online, the fraction of new renewables in competitive retail products has increased. In addition, green power product certification programs, which set standards for product quality, have required increasing amounts of “new” renewables. Beginning January 1, 2007, the *Green-e* certification program began requiring that all certified products to be supplied exclusively from “new” renewable energy projects.¹⁹ Similarly, the U.S. Environmental Protection Agency’s (EPA) Green Power Partnership now requires its partners to purchase “new” renewables to meet its minimum purchase criteria.²⁰

¹⁹ Administered by the San Francisco-based Center for Resource Solutions, the *Green-e* program certifies retail and wholesale green power products that meet its environmental and product content standards. For details on the *Green-e* National Standard, see <http://www.green-e.org/>.

²⁰ See <http://www.epa.gov/greenpower>.

The price premium charged for competitive market products depends on several factors such as the price of standard offer or default service, the availability of incentives to green power marketers or suppliers, and the cost of renewable energy generation available in the regional market. Some marketers charge prices close to or even below the default market price; others offer fixed-price products, which provide customers with protection against increasing prices for a specified period of time, usually one year.

Competitively marketed green power products generally carry a price premium of between 1¢/kWh and 2.5¢/kWh for residential and small commercial customers, although offerings have ranged from discounts to a premium of about 10¢/kWh in recent years. The renewable energy sources most commonly used to supply competitive green power offerings are wind, landfill gas, and small or low-impact hydropower, while a number of products also contain a small amount of solar energy. Higher-priced products often contain a larger fraction of “new” renewable energy content or resources that are more desirable to consumers, such as new wind and solar.

Similar to competitively marketed products, retail prices charged for REC products typically range from about 1¢/kWh to 2.5¢/kWh for residential and small commercial customers. In most cases, larger customers are able to negotiate lower prices. Nearly all REC products are sourced from new renewable energy generation projects, which is a requirement of both *Green-e* certification and the Environmental Resources Trust *Ecopower* program. Similarly, the U.S. EPA Green Power Partnership requires its partners to procure new renewables to meet the program’s minimum purchase requirements.

Purchasers often seek certification out of concerns over “double counting” and to ensure a level of oversight and auditing because RECs are generally not subject to the same regulatory scrutiny as electricity. Table 11 indicates that more than 80% of RECs and green power are certified at the retail or wholesale level by the Green-e certification program, based on NREL estimates and data from the 2006 Green-e Verification report. Note that the Green-e and NREL REC figures differ because some of the wholesale Green-e certified RECs are used to supply green pricing programs or competitively marketed retail products.

Table 11. Total Sales of Green-e Certified Renewable Energy, 2006 million kWh

	Residential	Commercial	Wholesale	Total
RECs	39	3,495	5,223	8,757
Green Pricing	484	125	0	609
Competitive Electricity	84	273	148	505
Total	607	3,893	5,371	9,871

Source: Center for Resource Solutions 2007

Wind energy is the most commonly used renewable energy source for RECs, although some REC products feature other renewable energy sources or blends of renewable sources, such as biomass (typically from bio-methane sources) and solar.

Customer Participation

Based on data received from green power marketers, we estimate that as many as 220,000 retail customers were purchasing green power from competitive suppliers or as unbundled RECs at the end of 2006 (Table 12). This number includes more than 80,000 participants in utility/marketer programs available in competitive markets. The number of customers participating in utility/marketer programs grew faster than utility green pricing programs as a whole (34% compared to 23%, respectively), likely because many of these programs are still relatively new.

In competitive markets, the vast majority of customers purchasing green power are residential customers. Of the 220,000 retail customers, about 10,000 purchase REC-only products. While most of the REC purchasers are also residential customers, the vast majority of REC sales on a kWh-basis are made to nonresidential customers due to the much larger purchase sizes.

Table 12. Estimated Cumulative Number of Customers Purchasing RECs or Green Power from Competitive Marketers, 2002-2006

	2002	2003	2004	2005	2006
Competitive Markets	~150,000	~170,000	<140,000	>180,000	~ 210,000
RECs*	<10,000	<10,000	<10,000	<10,000	~ 10,000
Total	<160,000	~180,000	<150,000	~190,000	~ 220,000
% Change	n/a	13%	-17%	27%	16%

*Includes only end-use customers purchasing RECs separate from electricity.

In recent years, most of the customer gains in competitive markets resulted from utility/marketer partnership programs in the Northeast as well as customers who switched from default service to retail green power providers in a few states, most notably Texas. These gains were tempered by losses in some states, where marketers struggled to provide electricity service to consumers amidst adverse market conditions and increasing costs. For example, one marketer ceased offering electricity generation service to its 30,000 customers in Pennsylvania in late 2005, citing adverse market rules and conditions that increased its operating costs. The company instead began offering an unbundled REC-based product supplied from national renewable energy resources, but likely suffered losses when turning back its customers to default electricity service.²¹ In addition, EIA data show declines in the number of green power customers in Virginia, and Washington D.C. during 2006 (see Appendix C).

²¹ Green Mountain Energy Company News Release, October 11, 2005, "Green Mountain Energy Company Introduces New Renewable Energy Product in Pennsylvania."

http://www.greenmountain.com/about/press_events/prviewer.jsp?dbId=18, accessed November 10, 2006.

Green Mountain quit the Ohio market at the same time, citing the Federal Energy Regulatory Commission's implementation of Seams Elimination Charge Adjustment and its resulting litigation, in addition to unexpected charges associated with the start of Midwest Independent Transmission System Operator Inc.'s Day II energy markets (see *Austin Business Journal* article, October 26, 2005

http://www.bizjournals.com/austin/stories/2005/10/24/daily30.html?from_rss=1).

Green Power Sales

An estimated 8.5 billion kWh of renewable energy was sold to retail customers by competitive green power and REC marketers in 2006 (Table 13). This figure includes renewable energy from both existing and new sources.

About 1.7 billion kWh of the total was sold as a bundled green power product in competitive electricity markets—a 20% decline from 2005. As noted earlier, the decline in sales of green power in competitive markets occurred as a result of adverse market conditions and increasing costs of serving customers with electricity in states such as Pennsylvania. The competitive market sales figure includes renewable energy sales through default utility/marketer programs or individual utility/marketer partnership in competitive markets, which amounted to approximately 425 million kWh in 2006 (Bird and Kaiser 2006). Retail REC sales increased by about 75%, reaching 6.8 billion kWh in 2006. Most of the growth in REC-only sales is attributable to the nonresidential sector.

Table 13. Retail Sales of Renewable Energy in Competitive Markets and RECs*
(million kWh)

	2003	2004	2005	2006
Competitive Markets				
Residential	n/a	2,140	1,330	1,000
Nonresidential	n/a	510	820	710
Subtotal	1,900	2,650	2,150	1,720
% Change		40%	-19%	-20%
% Residential		81%	62%	59%
RECs**				
Residential	n/a	40	40	110
Nonresidential	n/a	1,690	3,840	6,700
Subtotal	660	1,720	3,890	6,810
% Change		160%	126%	75%
% Residential		2%	1%	2%
Total Sales	2,560	4,370	6,040	8,530
% Change		71%	38%	41%

n/a = not available

*Totals may not add due to rounding.

**Includes only RECs sold to end-use customers separate from electricity. RECs are often purchased wholesale to supply utility and competitively marketed products and bundled with electricity. RECs bundled with electricity are included in utility green pricing and competitive market sales estimates.

Table 13 also delineates green power sales by customer segment. In 2006, similar to the previous year, about 60% of green power sales in competitive markets were to residential customers. In contrast, nearly all unbundled REC sales were to nonresidential customers. Generally, nonresidential customers find REC-only products attractive because of their flexibility and the greater potential for cost savings because they can be sourced from renewable energy projects in more favorable resource locations and the electricity need not be delivered directly to the customer, which lowers transaction costs. On the other hand, residential customers may be not be

aware that RECs are available or may not understand them. For commercial and institutional customers that operate facilities in multiple locations across the country, RECs may also provide a more efficient green power sourcing solution than working with utilities in each individual utility territory.²²

In 2006, renewable energy sold in competitive markets or as unbundled RECs represented an equivalent renewable energy capacity of more than 2,400 MW, with more than 2,100 MW of this total coming from “new” renewable energy resources (Table 14). Wind energy supplied 56% of sales, followed by biomass and landfill gas (27%), geothermal (9%), hydropower—often from small or low-impact installations—(7%), and solar (1%).

Table 14. Renewable Energy Sources Supplying Competitive and REC Markets, 2006

	Biomass/ Landfill Gas	Geo- thermal	Hydro	Solar	Wind	Total
MWh Sales	2,269,000	776,000	620,000	56,000	4,807,000	8,528,000
% of Total Sales	27%	9%	7%	1%	56%	100%
Capacity Factor*	85%	90%	50%	20%	30%	n/a
Total MW	304	98	142	32	1,830	2,406
MW New RE	172	75	25	30	1,830	2,130

* Capacity factors are derived from EPRI/DOE 1997 and EIA 2006 to reflect a blend of technologies installed over time and in areas with varying resource quality.

²² For example, the EPA Green Power Partnership reports that the majority of its top 25 partners purchase RECs (Appendix B). See <http://www.epa.gov/greenpower/>. In addition, the Green Power Market Development Group promotes the purchase of RECs among its members. . . . See <http://www.thegreenpowergroup.org/>.

Market Trends and Issues

Taken as a whole, the voluntary green power market continues to exhibit strong growth. However, green power markets do not operate in isolation from other markets and are also impacted by both state and federal policy initiatives and changes. In this section, we briefly describe a number of market and policy developments that will have an important influence on the future of green power markets.

Influence of Renewable Portfolio Standards on Green Power Markets

To date, renewable portfolio standards (RPS) requiring utilities or electricity providers to supply a certain quantity of their delivered energy from renewable energy sources have been adopted in 25 states and the District of Columbia. These requirements call for as much as 20% to 30% of electricity to come from renewable energy sources in the next 15 to 20 years. As the geographic coverage and stringency of these mandates for renewable energy grow, one question that has arisen is whether such policies will have a negative impact on participation in voluntary renewable energy markets. In addition, some have questioned whether there is a need for voluntary markets if compliance obligations are established, as customers may begin to rely on policies to support renewable energy.

A recent NREL analysis (Bird and Lokey 2007) found that there is little evidence to date to suggest that the adoption of an RPS will negatively affect voluntary market sales. Figure 7 shows the historic and current sales of renewable energy through green pricing programs in four states with an RPS in place. The year that the RPS was adopted or modified is listed in parentheses in the legend of the figure. To date, there is no apparent decline in sales once the RPS is adopted. In fact, sales continue to grow over time.

Furthermore, the analysis found that customer participation rates in utility green power programs were higher on average in states with an RPS than in those without. This finding was statistically significant based on an analysis of 2006 customer participation data provided by utilities. While it is not likely that the mere presence of an RPS encourages consumers to make voluntary green power purchases, the higher voluntary participation rates in states with RPS may be explained by a number of factors, such as: 1) consumers in RPS states may be more prone to support renewable energy in general, 2) consumers may be more aware of the benefits of renewable energy due to education about the benefits of the RPS policy, 3) some successful green pricing programs may be offered by public or cooperative utilities that are not subject to the state RPS, and 4) there may be more renewable energy supplies in states with an RPS which keeps prices relatively low for green power consumers, encouraging participation. On the other hand, the authors found no statistically significant difference in average renewable energy *sales* rates (as opposed to customer participation rates) through utility green power programs in states with and without an RPS.

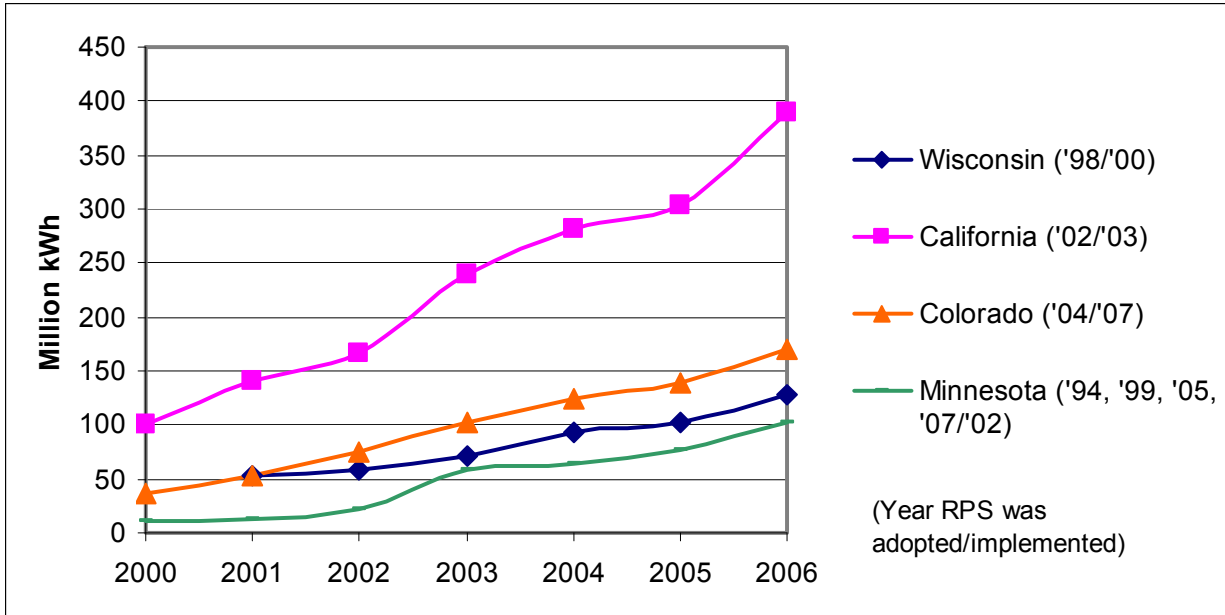


Figure 7. Voluntary green power sales in selected states with RPS

Figure 8 shows the relative magnitude of renewable energy sales through utility green power programs by state and whether an RPS policy has been enacted. The figure shows that many of the states that lead in terms of consumer purchases through voluntary utility green power programs also have RPS policies in place. The notable exceptions are Florida, Tennessee, and Oklahoma, which do not have RPS policies.

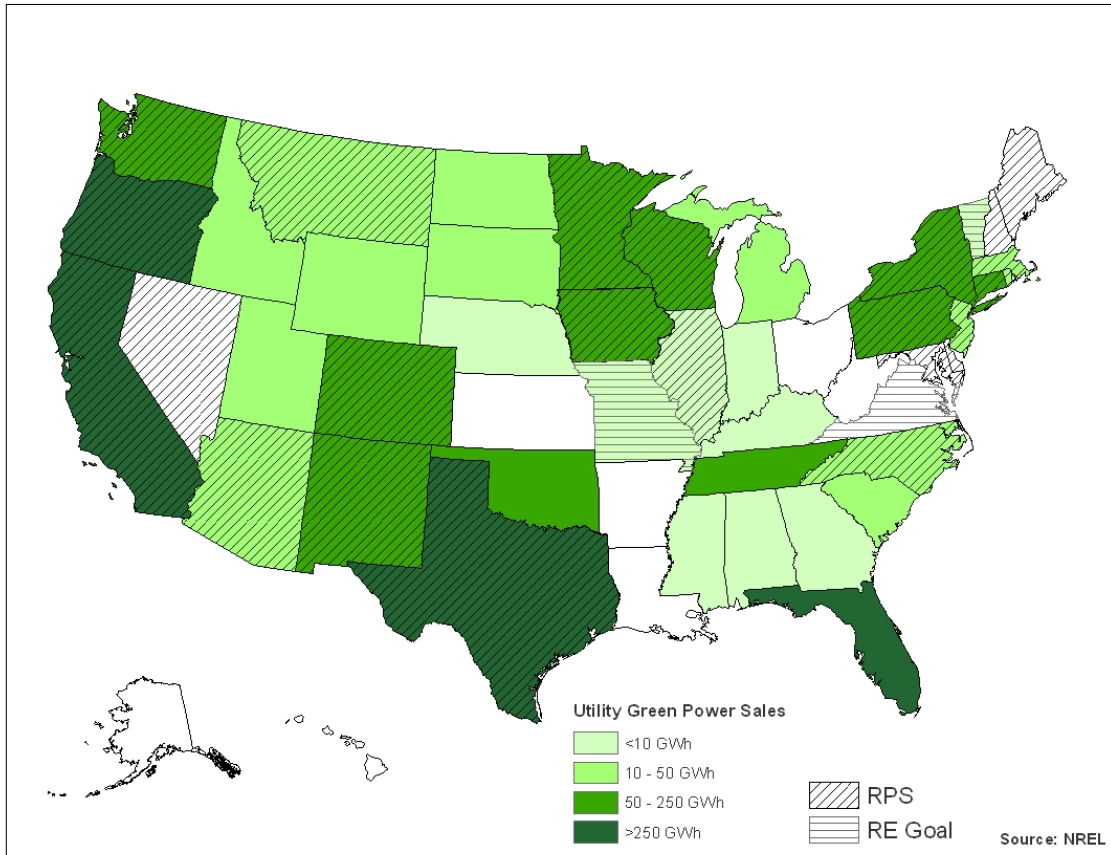


Figure 8. Voluntary green power purchases through utility programs in states with RPS

Even though these data suggest that voluntary market sales remain robust in states with an RPS, looking forward, this issue might require additional analysis once higher RPS penetration levels are achieved. It is possible that more aggressive policies could impact voluntary market participation. For example, RPS policies could limit green pricing or REC sales or participation if supply shortages were to arise. In this case, compliance obligations might limit the amount of renewable energy available to voluntary green pricing programs, or higher prices might discourage participation. However, it is likely that such shortages would be short term in nature.

It is also important to note that voluntary market demand has demonstrated consumer support for renewable energy, contributing to the development or expansion of RPS policies in some instances. For example, in Colorado, voluntary market support was an important driver for wind energy development in the mid to late 1990s prior to the adoption of an RPS. The very favorable consumer response to Xcel Energy's *Windsource* program demonstrated that there was considerable support for renewable energy and set the stage for the adoption of a statewide RPS by a voter-approved ballot initiative in 2004. Similarly, success of utility green pricing programs in Wisconsin helped facilitate the expansion of the state's RPS in 2006. Because of the emphasis on marketing, voluntary green power programs can raise awareness and educate consumers about the benefits of renewable energy in general, which may be important to the passage of an RPS.

Supply and Demand Balance of Renewable Electricity

Recent growth in voluntary market purchases has depended on an adequate supply of renewable electricity at a reasonable price. In recent years, the demand for renewable electricity has accelerated as a consequence of state and federal policies and the growth of voluntary green power purchase markets, along with the generally improving economics of renewable energy development.

For example, voluntary markets have grown at an average annual rate of about 50% for the past several years, and RPS policies have proliferated. However, U.S. non-hydro renewable electricity generation provided only about 2.3% of total U.S. electricity supply in 2005.²³ And global demand for renewable energy equipment has recently led to supply shortages for wind turbines and photovoltaic modules. The rapid growth in demand for renewable energy has raised the question of whether there are sufficient renewable energy supplies to meet both RPS and voluntary market demand.

A recent preliminary analysis conducted by NREL (Swezey, et al. 2007) identified a potential shortfall of renewable energy supply to meet projected demand from RPS and voluntary purchase markets nationally. Figure 9 compares the estimated demand for “new” renewable electricity from voluntary and compliance (RPS) markets with two renewable electricity supply scenarios (a base case and a high wind case) for the period 2004 through 2010. Voluntary market demand is currently, and is expected to remain, below both existing and projected renewable electricity supply.²⁴ However, when combined with RPS requirements, total demand from these two markets already slightly exceed the available supply of “new” renewable electricity, and the gap becomes more pronounced through 2010 as state RPS requirements ramp up. Under a more optimistic growth path for new wind energy capacity additions, the gap narrows considerably, but there is still a supply shortage. In 2010, the projected renewable electricity shortfall is 28 million MWh under the base-case scenario and 8 million MWh under the high-wind scenario.

If renewable electricity shortages develop, it is likely that renewable electricity prices will rise. Higher prices would dampen voluntary demand and RPS demand might even outbid some existing voluntary demand as state non-compliance penalties and alternative compliance payment levels set the market price. Other factors that could affect growth in voluntary markets are competition from energy efficiency certificates and demand for carbon offsets. In addition, demand for voluntary market RECs could decline if carbon regulations are adopted that prevent green power purchases from affecting greenhouse gas (GHG) emissions levels and thus limit claims that can be made by marketers and purchasers.

It is important to note, however, that regional differences may result in greater availability of supply for the voluntary market than suggested by the aggregate national picture. Some states, such as Texas, may have renewable energy generation in excess of that needed to meet RPS requirements, while others may experience shortages. Any excess generation that is not eligible to be used for RPS compliance would be available to meet voluntary market demand. State or

²³ U.S. Energy Information Administration, Electric Power Annual 2005, Revised Data, DOE/EIA-0348(2005), November 2006. http://www.eia.doe.gov/cneaf/electricity/epa/epa_sum.html

²⁴ Voluntary market sales are assumed to grow at an annual rate of 35% through 2010 in the analysis, which is less than the 50% annual average growth rate realized in recent years.

region-specific analyses are necessary to better understand the impact of regional supply and demand balances on renewable electricity availability for voluntary markets.

Further, while the analysis suggests a near-term deficit in renewable electricity supplies, the results do not necessarily portend a long-term shortage as it is likely that, with continuing Federal and state support, the renewable energy industry can greatly ramp up deployment and production over the medium and long term.

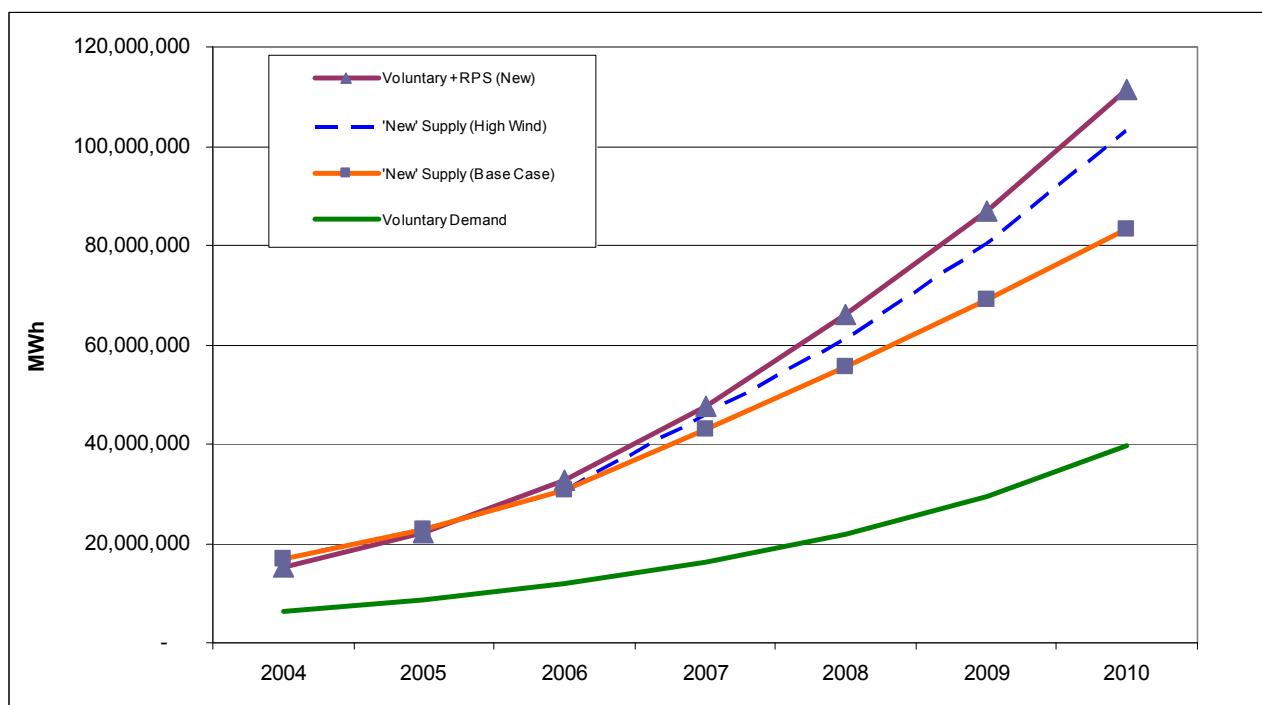


Figure 9. Estimated and projected supply and demand for renewable electricity

Carbon Market Interaction Issues

Carbon control policies are taking shape in the Northeast, Midwest, and Western regions of the United States, while carbon regulation continues to be debated at the national level. The treatment of renewable energy under these evolving programs and whether renewable energy purchases will affect overall carbon dioxide (CO₂) emissions levels has important implications for voluntary green power markets. Currently, many nonresidential customers in particular purchase green power (mostly as RECs) for its greenhouse gas benefits (i.e., lack of CO₂ emissions). The design details of emerging cap and trade programs, such as whether renewable generation actually reduces the number of emission allowances available to emitting sources, have the ability to affect the CO₂ emissions benefits.²⁵

The Regional Greenhouse Gas Initiative (RGGI), which involves 10 states in the Northeast, is slated to be the first U.S.-based carbon cap and trade program. Currently, participating states are in the process of finalizing implementation rules in anticipation of the official launch in 2009.

²⁵ For additional discussion, see Bird, et al. 2007.

Under the RGGI program, voluntary purchases of green power will only result in the reduction of overall CO₂ emission levels if participating states adopt the “voluntary market set aside” provision that was included in the Model Rule.²⁶ This provision enables states to set aside and retire allowances equivalent to voluntary purchases of renewable energy by consumers.

As of October 2007, two states (Connecticut and Rhode Island) had adopted the voluntary market set aside in implementing legislation, while another four states (Massachusetts, Maryland, New Hampshire, and New York) have included it in draft rules or legislation. Two states did not include it in implementing legislation (Maine and Vermont), while the remaining two states (New Jersey and Delaware) have yet to address it (Holt 2007). In the states that do officially adopt the set aside for voluntary purchases, marketers and purchasers will be able to make substantiated claims of CO₂ emissions benefits. In those states that do not adopt the provision, voluntary green power purchases will not affect overall CO₂ emissions levels and marketing claims will need to be adjusted accordingly.

In November 2007, Governors of 10 Midwestern states signed the Midwestern Regional Greenhouse Gas Reduction Accord, which sets a goal of establishing a multi-sector cap and trade program for participating states. The Western Climate Initiative, which involves 6 Western states, continues to move forward as well, but detailed implementation plans have yet to be released. Therefore, it is unclear how voluntary renewable energy markets may be affected by these emerging programs at this time.

²⁶ See the RGGI Model Rule at <http://www.rggi.org/modelrule.htm>.

Conclusions and Observations

The green power market continues to exhibit strong growth and provide an important demand-driven stimulus for renewable energy development. Green power markets provide an additional revenue stream for renewable energy projects, and raise consumer awareness of the benefits of renewable energy. Based on this review, we have identified the following market trends:

- In 2006, retail sales of renewable energy in voluntary purchase markets totaled 12 billion kWh, representing a capacity equivalent of 3,500 MW of renewable energy, including 3,100 MW from “new” renewable energy sources. The latter figure corresponds to nearly 30% of the total renewable energy capacity additions since 1997; thus, green power purchases are providing support for a significant fraction of new renewable energy projects, nationally.
- Wind energy provided 62% of green power sales, followed by biomass energy sources including landfill gas (23%), geothermal (7%), hydropower (6%), and solar (1%).
- Total market sales increased by about 40% in 2006, with much of this growth driven by REC sales to nonresidential consumers. As a result, commercial and institutional REC markets now represent more than half of total green power market sales, surpassing sales in competitive electricity markets and utility green pricing programs.
- Utility green pricing programs in regulated electricity markets continued to show steady growth, with sales increasing by nearly 40% in 2006. However, a relatively small number of utility programs continue to dominate sales and customer numbers. This suggests both that many programs are not achieving their full potential and that stronger performance is possible with effective program design and implementation along with dedicated marketing.
- Utility green pricing premiums have continued to fall, owing to a combination of higher prices of conventional generation fuels and lower renewable resource costs.
- Competitive markets continued to exhibit volatility, with sales declining 20% during 2006. Difficulties posed by market rules and conditions, as well as the continuing challenge of convincing customers to switch electricity providers, has led marketers to continue to shift away from delivered renewable electricity products toward marketing REC products, as well as to pursue partnerships with default suppliers to supply and market green power. Despite the losses in competitive markets, programs in which marketers have teamed with default suppliers continued to exhibit strong growth in both sales and customers during 2006, showing that utility/marketer partnerships hold promise for future growth.
- In 2006, sales to nonresidential customers continued to outpace those to residential consumers, bringing the fraction of nonresidential sales to nearly three-quarters of all green power sales on a kWh-basis. The growing dominance of nonresidential sales is a departure from the early history of green power markets when most products and programs were oriented toward residential customers. Looking forward, demand by the nonresidential sector appears to be increasing and will likely continue to drive future voluntary market growth.

- Overall, the number of customers purchasing green power increased by roughly 20%, with gains in utility green pricing programs and utility/marketer programs offsetting losses in some competitive retail markets.

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Appendix A

Estimates of New Renewable Energy Capacity Serving Green Power Markets, 2000-2004

Prior to 2005, estimates of the capacity serving green power markets were estimated based on renewable energy projects used to serve green pricing programs rather than derived from renewable energy sales. Therefore, the 2005 and 2006 capacity estimates are not directly comparable to capacity estimates from previous years. However, the two approaches yield relatively consistent results.

Bird and Swezey (2005b) provide details on the derivation of capacity estimates for years 2004 and earlier. Table A-1 presents estimates of the cumulative new renewable energy capacity serving voluntary markets from 2000 to 2004. A brief description of the methodology is included below.

Table A-1. Estimated Cumulative New Renewable Energy 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

*Data not directly comparable with Table 4.

**Totals may not add due to rounding.

Source: Bird and Swezey (2005b).

The 2004 and earlier estimates of capacity serving green power markets focus on *new* renewable resources used to serve green power customers. New renewable resources are defined as projects or portions of projects built specifically to serve green power customers or recently constructed projects that are used to supply green power customers and meet the regional *Green-e* standards¹ for new renewables. The estimates do not include pre-existing renewable energy projects used for green power supply or capacity used to meet state renewables portfolio standard (RPS) requirements or other renewable energy mandates.

These estimates generally include the entire capacity of a given renewable energy project, irrespective of whether the output has been fully subscribed by green power purchasers (i.e., if a utility or developer completed a project before the entire output was sold to prospective customers). Thus, the estimates may include some capacity for which a green power buyer was not yet secured. However, in cases where a portion of a project is used to meet a renewable energy mandate, only the remainder of the project is counted.

Appendix B

Table B-1. Top 25 Purchasers in the U.S. EPA Green Power Partnership, September 2007

Rank	Organization	Green Power Usage (kWh)	% of Total Electricity	Organization Type	Resources
1	PepsiCo	1,105,045,154	100%	Food & Beverage	Various
2	Wells Fargo & Co.	550,000,000	42%	Banking & Fin. Services	Wind
3	Whole Foods Market	509,104,786	100%	Retail	Biogas, Solar, Wind
4	The Pepsi Bottling Group	457,851,838	100%	Food & Beverage	Various
5	U.S. Air Force	457,500,000	4%	Government (Federal)	Biomass, Geothermal, Solar, Wind
6	Johnson & Johnson	400,702,978	39%	Health Care	Biomass, Small-hydro, Solar, Wind
7	U.S. EPA	329,880,513	100%	Government (Federal)	Biogas, Biomass, Geothermal, Wind
8	Kohl's Department Stores	201,396,000	20%	Retail	Biogas, Biomass
9	Los Angeles County Sanitation Districts	196,003,000	57%	Government (Local, Municipal)	Biogas
10	Starbucks	185,000,000	20%	Restaurant & Food Services	Wind
11	DuPont Co.	180,000,000	4%	Chemical	Biogas, Wind
12	U.S. DOE	157,964,000	3%	Government (Federal)	Biogas, Biomass, Geothermal, Small-hydro, Wind
13	PepsiAmericas	157,062,875	100%	Food & Beverage	Various
14	Vail Resorts	152,000,000	100%	Travel & Leisure	Wind
15	Cisco Systems	128,204,000	22%	Information Technology	Various
16	HSBC N.A.	124,544,000	35%	Banking & Fin. Services	Wind
17	Staples	121,800,000	20%	Retail	Biomass, Solar, Wind
18	New York University	118,616,000	100%	Education (Higher)	Wind
19	World Bank Group	114,735,000	100%	Non-Profit (NGO)	Wind
20	University of Pennsylvania	112,000,000	29%	Education (Higher)	Wind
21	IBM Corp.	110,103,000	4%	Information Technology	Wind
22	Mohawk Fine Papers	100,200,000	102%	Ag. & Nat. Resources	Wind
23	U.S. Dept. of Veteran Affairs	90,000,000	3%	Government (Federal)	Biomass
24	NatureWorks LLC	89,000,000	89%	Consumer Products	Wind
25	Sprint Nextel	87,600,000	47%	Telecommunications	Wind

Source: U.S. EPA Green Power Partnership <http://www.epa.gov/greenpower/partners/top25.htm>

Appendix C

Table C-1. Estimated U.S. Green Pricing Customers by State and Customer Class, 2004 and 2005

State	Electric Industry Participants 2005 ^a	Participating Customers			
		2005			2004
		Residential	Non-residential	Total	Total
Alabama	2	970	5	975	755
Alaska	1	320	5	325	
Arizona	3	5,783	113	5,896	5,792
Arkansas					
California	9	38,728	1,708	40,436	62,090
Colorado	24	39,387	1,022	40,409	40,166
Connecticut					
Delaware					15
District of Columbia	2	4,743	2,306	7,049	5,222
Florida	4	23,569	30	23,599	11,076
Georgia	16	3,738	57	3,795	3,241
Hawaii	3	4,234	45	4,279	4,005
Idaho	6	3,764	114	3,878	4,283
Illinois	6	1,225	2	1,227	31
Indiana	10	1,400	27	1,427	1,339
Iowa	54	7,896	154	8,050	7,313
Kansas					
Kentucky	10	796	13	809	513
Louisiana					
Maine	2	1,707	312	2,019	8
Maryland	2	28,772	3,995	32,727	15,178
Massachusetts	3	4,543	166	4,709	2,866
Michigan	9	1,867	147	2,014	1,376
Minnesota	93	24,374	314	24,688	23,058
Mississippi	1	3	0	3	81
Missouri	15	443	8	451	398
Montana	6	392	8	400	407
Nebraska	4	3,720	48	3,768	4,071
Nevada	3	384	0	384	498
New Hampshire					
New Jersey	2	1,390	302	1,692	1,911
New Mexico	11	9,400	452	9,852	8,461
New York	7	6,192	385	6,577	1,485
North Carolina	19	7,610	277	7,887	6,266
North Dakota	12	6,835	22	6,857	4,687
Ohio	3	360,398	42,035	402,433	454,509
Oklahoma	7	10,274	480	10,754	9,537
Oregon	11	62,267	1,488	63,755	53,902
Pennsylvania	3	29,718	40	29,758	36,328
Rhode Island	2	3,385	92	3,477	1,505
South Carolina	10	2,188	267	2,455	2,076
South Dakota	7	687	28	715	473
Tennessee					6,523
Texas	7	74,948	12,276	87,224	68,380
Utah	5	16,294	419	16,713	14,067
Vermont	1	2,008	87	2,095	899
Virginia	2	2,989	20	3,009	3,438
Washington	20	30,679	672	31,351	28,109
West Virginia					
Wisconsin	55	38,668	1,033	39,701	29,199
Wyoming	5	3,086	64	3,150	2,796
Total	442	871,774	70,998	942,772	928,333

^a Includes entities with green pricing programs in more than one state.

Note: Non-residential may include some customers for whom no customer class is specified. Blank cells indicate no data was reported for the state or the number of customers in a class was zero. Totals may not sum due to rounding.

Source: Energy Information Administration, Green Pricing and Net Metering Programs, 2005. July 2007.

<http://www.eia.doe.gov/cneaf/solar/renewables/page/greenprice/gptable63.xls>

Table C-2. Estimated U.S. Green Pricing Customers by Customer Class, 2002-2006

Year	Green Pricing		
	Residential	Non Residential	Total
2002	688,069	23,481	711,550
2003	819,579	57,547	877,126
2004	864,794	63,539	928,333
2005	871,774	70,998	942,772
2006	609,213	35,954	645,167

Source: Energy Information Administration, Form EIA-861, "Annual Electric Power Industry Report."
Electric Power Annual, 2006, October 2006 <http://www.eia.doe.gov/cneaf/electricity/epa/epat7p5.html>

Appendix D

Table D-1. Utilities Offering Green Pricing Programs in Regulated Markets, 2006

Investor-Owned Utilities	Central Iowa Power Cooperative	Edmond Electric
Alabama Power Company	Corn Belt Power Cooperatives	City of Eldridge (IA)
Alliant Energy	Dairyland Power Cooperative*	ElectriCities
AmerenUE	Dakota Electric Association	Emerald People's Utility District
Arizona Public Service	Delaware Electric Cooperative	Estes Park Light & Power
Avista Utilities	Deseret Power	Eugene Water & Electric Board
Central Vermont Public Service	East Kentucky Power Cooperative*	Fort Collins Utilities
Cheyenne Light, Fuel and Power Company	Farmers Electric Cooperative	Gainesville Regional Utilities
Connecticut Light and Power	Georgia Electric Membership Corporation*	Grant County PUD
Consumers Energy	Golden Valley Electric Association	Grays Harbor PUD
Dominion North Carolina Power	Great River Energy*	Heartland Consumers Power District
DTE Energy	Gunnison County Electric Association	Iowa Association of Municipal Utilities*
Duke Energy	Holy Cross Energy	Keys Energy Services
El Paso Electric Company	Hoosier Energy*	Lakeland Electric
Entergy Gulf States	Intermountain Rural Electric Association	Lansing Board of Water and Light
Florida Power & Light Company	KAMO Electric Cooperative	Lenox Municipal Utilities
Georgia Power	Kauai Island Utility Cooperative (KIUC)	Lewis County PUD
Green Mountain Power	La Plata Electric Association	Lincoln Electric System
Gulf Power Company	Lower Colorado River Authority	Lodi Utilities
Hawaiian Electric Company	Lower Valley Energy	Longmont Power & Communications
Idaho Power Company	Midstate Electric Cooperative	Los Alamos County (NM)
Indianapolis Power & Light Company	Minnkota Power Cooperative*	Los Angeles Department of Water and Power
Kansas City Power & Light	New-Mac Electric Cooperative	Loveland Water & Power
Kentucky Utilities Company	Orcas Power & Light	Mason County PUD No. 3
Louisville Gas and Electric Company	Oregon Trail Electric Cooperative	Missouri Joint Municipal Electric Utility
Madison Gas & Electric	Park Electric Cooperative	Missouri River Energy Services*
MidAmerican Energy	Pedernales Electric Cooperative	Moorhead Public Service
Minnesota Power	Peninsula Light Company	Muscatine Power and Water
Nevada Power	PNGC Power*	City of Naperville
NorthWestern Energy	Southern Montana Electric G&T Cooperative	City of New Smyrna Beach
NSTAR Electric	Tri-State Generation and Transmission Association*	Northern Wasco County PUD
OG&E Electric Services	Vigilante Electric Cooperative	Oklahoma Municipal Power Authority
Otter Tail Power Company	Wabash Valley Power Association*	Omaha Public Power District
Pacific Gas and Electric Company	Western Farmers Electric Cooperative	Owatonna Public Utilities
PacifiCorp	Yampa Valley Electric Association	Pacific County PUD
Portland General Electric Company		City of Palo Alto Utilities
Progress Energy Carolinas		Pasadena Water & Power
Public Service Company of New Mexico	Federal	Platte River Power Authority*
Puget Sound Energy	Tennessee Valley Authority*	Rochester Public Utilities (MN)
Savannah Electric		Roseville Electric
Sierra Pacific Power Company	Municipal/Public Utilities	Sacramento Municipal Utility District
Tampa Electric Company	City of Alameda	Salt River Project
Tucson Electric Power Company	American Municipal Power-Ohio	Santee Cooper
UniSource Energy Services	Anaheim Public Utilities	Seattle City Light
United Illuminating	City of Ashland	Shrewsbury Electric and Cable Operations
Upper Peninsula Power Company	Austin Energy	Silicon Valley Power
Vectren Energy Delivery of Indiana	Austin Utilities (MN)	Snohomish County Public Utility District
We Energies	Benton County Public Utility District	Southern Minnesota Municipal Power Agency*
Wisconsin Public Service Corporation	City of Bowling Green	City Utilities of Springfield (MO)
Xcel Energy	Burbank Water and Power	City of St. Charles
	Cedar Falls Utilities	City of St. George
	Central Minnesota Municipal Power Agency	Tacoma Power
Electric Cooperatives	Chelan County Public Utility District	City of Tallahassee
Alabama Electric Cooperative	Clallam County PUD	Traverse City Light & Power
Associated Electric Cooperative, Inc.	Clark Public Utilities	Waverly Light and Power
Bandera Electric Cooperative	Colorado Springs Utilities	Wisconsin Public Power Inc.
Basin Electric Power Cooperative*	Columbia River PUD	
Boone Electric Cooperative	Concord Municipal Light Plant	
Buckeye Power	Cowlitz PUD	
CCS/Soyland	CPS Energy (San Antonio)	
Central Electric Cooperative		

**denotes program offered through multiple utilities or distribution cooperatives*

Table D-2. Utility/Marketer Green Power Programs in Restructured Electricity Markets, 2006

Atlantic City Electric
Consumers Energy
Connecticut Light & Power
JP&L
Long Island Power Authority
National Grid (Massachusetts Electric, Nantucket
Electric, Narragansett Electric, Niagara Mohawk)
NYSEG
Rochester Gas and Electric
Rockland Electric
PECO Energy
PSE&G
United Illuminating

Appendix E

Table E-1: Table of Utility Green Pricing Programs, September 2007

State	Utility Name	Program Name	Type	Start Date	Premium
AL	Alabama Electric Cooperative: City of Andalusia, Baldwin Electric Membership Cooperative, City of Brundidge, Central Alabama Electric Cooperative, Clarke-Washington Electric Membership Cooperative, Coosa Valley Electric Cooperative, Covington Electric Cooperative, Dixie Electric Cooperative, City of Elba, City of Opp, Pea River Electric Cooperative, Pioneer Electric Cooperative, South Alabama Electric Cooperative, Southern Pine Electric Cooperative, Tallapoosa River Electric Cooperative, Wiregrass Electric Cooperative	Green Power Choice	landfill gas	2006	2.0¢/kWh
AL	Alabama Power Company	Renewable Energy Rate	biomass co-firing (wood)	2003 / 2000	6.0¢/kWh
AL	TVA: City of Athens Electric Department, Cullman Electric Coop, Cullman Power Board, Decatur Utilities, Florence Utilities, Hartselle Utilities, Huntsville, Joe Wheeler EMC, Muscle Shoals Electric Board, Scottsboro Electric Power Board, Sheffield Utilities, Tuscumbia Electric Department	Green Power Switch	landfill gas, PV, wind	2000	2.67¢/kWh
AK	Golden Valley Electric Association	Sustainable Natural Alternative Power (SNAP)	various local projects	2005	Contribution
AZ	Arizona Public Service	Green Choice	wind and geothermal	2007	1.0¢/kWh
AZ	Salt River Project	EarthWise Energy	central PV, wind, landfill gas, small hydro, geothermal	1998/2001	3.0¢/kWh
AZ	Tri-State Generation & Transmission: Columbus Electric Cooperative, Inc.	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh
AZ	Tucson Electric	GreenWatts	landfill gas, PV	2000	10¢/kWh
AZ	UniSource Energy Services	GreenWatts	PV	2004	10¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
CA	Anaheim Public Utilities	Green Power for the Grid	wind, landfill gas	2002	1.5¢/kWh
CA	Anaheim Public Utilities	Sun Power for the Schools	PV	2002	Contribution
CA	Burbank Water and Power	Green Energy Champion	various	2007	2.0¢/kWh
CA	Los Angeles Department of Water and Power	Green Power for a Green LA	wind, landfill gas	1999	3.0¢/kWh
CA	PacifiCorp: Pacific Power	Blue Sky Block	wind	2000	1.95¢/kWh
CA	Palo Alto Utilities/3 Degrees	Palo Alto Green	wind, PV	2003 / 2000	1.5¢/kWh
CA	Pasadena Water & Power	Green Power	wind	2003	2.5¢/kWh
CA	Roseville Electric/3Degrees	Green Roseville	wind, PV	2005	1.5¢/kWh
CA	Sacramento Municipal Utility District	Greenergy	wind, landfill gas, hydro, PV	1997	1.0¢/kWh or \$6/month
CA	Silicon Valley Power / 3 Degrees	Santa Clara Green Power	wind, PV	2004	1.5¢/kWh
CO	Colorado Springs Utilities	Green Power	wind	1999	3.0¢/kWh
CO	Holy Cross Energy	Wind Power Pioneers	wind	1998	1.5¢/kWh
CO	Holy Cross Energy	Local Renewable Energy Pool	small hydro, PV	2002	2.33¢/kWh
CO	Intermountain Rural Electric Association / Sterling Planet	National Wind	wind	2006	1.0¢/kWh
CO	Intermountain Rural Electric Association / Sterling Planet	National Solar	solar	2006	5.5¢/kWh
CO	Platte River Power Authority: Estes Park, Fort Collins Utilities, Longmont Power & Communications, Loveland Water & Power	Wind Energy Premium	wind	1999	1.0¢/kWh - 2.5¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
CO	Tri-State Generation & Transmission : Delta-Montrose Electric Association, Empire Electric Association, Inc., Gunnison County Electric Association, Inc., Highline Electric Association, La Plata Electric Association, Inc., Morgan County Rural Electric Association, Mountain Parks Electric, Inc., Mountain View Electric Association, Inc., Poudre Valley Rural Electric Association, Inc., San Isabel Electric Association, Inc., San Luis Valley Rural Electric Cooperative, Inc., San Miguel Power Association, Inc., Sangre de Cristo Electric Association, Inc., Southeast Colorado Power Association, United Power, Inc., White River Electric Association, Inc., Y-W Electric Association, Inc.	Renewable Resource Power Service	wind, hydro	1998	1.25¢/kWh
CO	Xcel Energy	Renewable Energy Trust	PV	1993	Contribution
CO	Xcel Energy	WindSource	wind	1997	-0.67¢/kWh
CO	Yampa Valley Electric Association	Wind Energy Program	wind	1999	3.0¢/kWh
DE	Delaware Electric Cooperative	Renewable Energy Rider	landfill gas	2006	0.2¢/kWh
FL	Alabama Electric Cooperative: CHELCO, Escambia River Electric Cooperative, Gulf Coast Electric Cooperative, West Florida Electric Cooperative	Green Power Choice	landfill gas	2006	2.0¢/kWh
FL	City of Tallahassee/Sterling Planet	Green for You	PV only	2002	11.6¢/kWh
FL	City of Tallahassee/Sterling Planet	Green for You	biomass, PV	2002	1.6¢/kWh
FL	Florida Power & Light / Green Mountain Energy	Sunshine Energy	biomass, wind, PV	2004	0.975¢/kWh
FL	Gainesville Regional Utilities	GRUgreen Energy	landfill gas, wind, PV	2003	2.0¢/kWh
FL	Keys Energy Services / Sterling Planet	GO GREEN: USA Green	wind, biomass, PV	2004	1.60¢/kWh
FL	Keys Energy Services / Sterling Planet	GO GREEN: Florida Ever Green	solar hot water, PV, biomass	2004	2.75¢/kWh
FL	Tampa Electric Company (TECO)	Renewable Energy Program	PV, landfill, biomass co-firing (wood)	2000	2.5¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
FL	Utilities Commission City of New Smyrna Beach	Green Fund	local PV projects	1999	Contribution
GA	Georgia Electric Membership Corporation (35 of 42 coops offer program): Altamaha EMC, Amicalola EMC, Canoochee EMC, Carroll EMC, Central Georgia EMC, Cobb EMC, Coastal Electric, Colquitt EMC, Coweta-Fayette EMC, Diverse Power, Flint Energies, Grady EMC, GreyStone Power, Habersham EMC, Hart EMC, Irwin EMC, Jackson EMC, Jefferson Energy, Little Ocmulgee EMC, Middle Georgia EMC, Mitchell EMC, Ocmulgee EMC, Oconee EMC, Planters EMC, Rayle EMC, Sawnee EMC, Slash Pine EMC, Snapping Shoals EMC, Southern Rivers Energy, Sumter EMC, Three Notch EMC, Tri-County EMC, Upson EMC, Walton EMC, Washington EMC	Green Power EMC	landfill gas, PV in schools	2001	2.0¢/kWh-3.3¢/kWh
GA	Georgia Power	Green Energy	landfill gas	2006	4.5¢/kWh
GA	TVA: Blue Ridge Mountain Electric Membership Corporation, North Georgia Electric Membership Corporation	Green Power Switch	landfill gas, PV, wind	2000	2.67¢/kWh
HI	Hawaiian Electric	Sun Power for Schools	PV in schools	1997	Contribution
HI	Kauai Island Utility Cooperative	Green Rate	distributed renewable energy systems	TBD	TBD
ID	Avista Utilities	Buck-A-Block	wind	2002	0.33¢/kWh
ID	Idaho Power	Green Power Program	various	2001	0.98¢/kWh
ID	PacifiCorp: Utah Power	Blue Sky	wind	2003	1.95¢/kWh
ID	Vigilante Electric Cooperative	Alternative Renewable Energy Program	wind	2003	1.1¢/kWh
IL	CCS/Soyland and Community Energy, Inc. (8 of 11 coops offer program): Adams Electric Co-op, Coles-Moultrie Electric, Eastern Illini Electric, McDonough Power, Menard, Rural Electric Convenience Co-op, Shelby Electric, Spoon River Electric Co-op	EcoEnergy	wind	2005	3.0¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
IL	City of Naperville / Community Energy	Renewable Energy Option	wind, small hydro, PV	2005	2.5¢/kWh
IL	City of St. Charles/ComEd and Community Energy, Inc.	TBD	wind, landfill gas	2003	Contribution
IL	Dairyland Power Cooperative: Jo-Carroll Energy/Elizabeth	Evergreen Renewable Energy Program	landfill gas, biogas, hydro, wind	1997	1.5¢/kWh
IN	Duke Energy	GoGreen Power	wind, PV, landfill gas, digester gas	2001	2.5¢/kWh
IN	Hoosier Energy (5 of 17 coops offer program): Southeastern Indiana REMC, South Central Indiana REMC, Utilities District of Western Indiana REMC, Decatur County REMC, Daviess-Martin County REMC	EnviroWatts	landfill gas	2001	2.0¢/kWh-4.0¢/kWh
IN	Indianapolis Power & Light	Green Power Option	wind	1998	0.35¢/kWh
IN	Wabash Valley Power Association (7 of 27 coops offer program): Boone REMC, Hendricks Power Cooperative, Kankakee Valley REMC, Miami-Cass REMC, Tipmont REMC, White County REMC, Northeastern REMC	EnviroWatts	landfill gas	2000	0.9¢/kWh-1.0¢/kWh
IA	Alliant Energy	Second Nature	landfill gas, wind	2001	2.0¢/kWh
IA	Associated Electric Cooperative, Inc.: Access Energy Cooperative, Chariton Valley Electric Cooperative, Southern Iowa Electric Cooperative	varies by utility	biomass, wind	2003	2.0¢/kWh-3.5¢/kWh
IA	Basin Electric Power Cooperative: Lyon Rural, Harrison County, Nishnabotna Valley Cooperative, Northwest Rural Electric Cooperative, Western Iowa	Prairie Winds	wind	2000	0.5¢/kWh
IA	Cedar Falls Utilities	Harvest the Wind	wind	2000	2.5¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
IA	Central Iowa Power Cooperatives (all 12 coops/1 muni): Maquoketa Valley Electric Cooperative, Eastern Iowa REC, East-Central Iowa REC, Linn County REC, Pella, TIP Rural Electric Cooperative, Clarke Electric Cooperative, Midland Power Cooperative, Guthrie County REC, Farmers Electric Cooperative, Southwest Iowa REC, Consumer Energy, South Iowa Municipal Electric Cooperative Association	Wind Power	wind	2006	1.5¢/kWh-2.5¢/kWh
IA	Corn Belt Power Cooperatives (5 of 11 coops offer program): Butler County REC, Franklin REC, Grundy County REC, Humboldt County REC, Sac County REC	Energy Wise Renewables	wind	2003	1.5¢/kWh
IA	Dairyland Power Cooperative: Allamakee-Clayton/Postville, Hawkeye Tri-County/Cresco, Heartland Power/Thompson & St. Ansgar	Evergreen Renewable Energy Program	hydro, wind, landfill gas, biogas	1998	3.0¢/kWh
IA	Farmers Electric Cooperative	Green Power Project	biodiesel, wind	2004	Contribution

State	Utility Name	Program Name	Type	Start Date	Premium
IA	Iowa Association of Municipal Utilities (84 of 137 munis offer program) Afton, Algona, Alta Vista, Aplington, Auburn, Bancroft, Bellevue, Bloomfield, Breda, Brooklyn, Buffalo, Burt, Callender, Carlisle, Cascade, Coggon, Coon Rapids, Corning, Corwith, Danville, Dayton, Durant, Dysart, Earlville, Eldridge, Ellsworth, Estherville, Fairbank, Farnhamville, Fontanelle, Forest City, Gowrie, Grafton, Grand Junction, Greenfield, Grundy Center, Guttenberg, Hopkinton, Hudson, Independence, Keosauqua, La Porte City, Lake Mills, Lake View, Laurens, Lenox, Livermore, Maquoketa, Marathon, McGregor, Milford, Montezuma, Mount Pleasant, Neola, New Hampton, Ogden, Orient, Osage, Panora, Pella, Pocahontas, Preston, Readlyn, Rockford, Sabula, Sergeant Bluff, Sibley, Spencer, Stanhope, State Center, Stratford, Strawberry Point, Stuart, Tipton, Villisca, Vinton, Webster City, West Bend, West Liberty, West Point, Westfield, Whittemore, Wilton, Winterset	Green City Energy	wind, biomass, PV	2003	Varies by utility
IA	MidAmerican Energy	Renewable Advantage	wind	2004	Contribution
IA	Missouri River Energy Services: Alton, Atlantic, Denison, Fontanelle, Hartley, Hawarden, Kimballton, Lake Park, Manilla, Orange City, Paullina, Primghar, Remsen, Rock Rapids, Sanborn, Shelby, Sioux Center, Woodbine	RiverWinds	wind	2003	2.0¢/kWh-2.5¢/kWh
IA	Muscatine Power and Water	Solar Muscatine	PV	2004	Contribution
IA	Waverly Light & Power	Green Power Choice	wind	2003	Contribution
IA	Waverly Light & Power	Iowa Energy Tags	wind	2001	2.0¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
KY	East Kentucky Power Cooperative: Blue Grass Energy, Clark, Cumberland, Fleming-Mason, Grayson, Inter-County Energy, Jackson, Licking Valley, Nolin, Owen Electric, Salt River, Shelby, South Kentucky	EnviroWatts	landfill gas	2002	2.75¢/kWh
KY	E.ON U.S.: Louisville Gas and Electric Co., Kentucky Utilities Co.	Green Energy	100% low impact hydro	2007	1.67¢/kWh residential, 1.3¢/kWh commercial
KY	TVA: Bowling Green Municipal Utilities, Franklin Electric Plant Board	Green Power Switch	landfill gas, PV, wind	2000	2.67¢/kWh
LA	Entergy Gulf States	Green Pricing Program	biomass	2007	2.5¢/kWh
MA	Concord Municipal Light Plant (CMLP)	Green Power	hydro	2004	3.0¢/kWh
MA	Shrewsbury Electric and Cable Operations	SELCO GreenLight	wind	2007	6.67¢/kWh
MI	Consumers Energy	Green Generation	68% wind, 32% landfill gas	2005	1.67¢/kWh
MI	DTE Energy	GreenCurrents	wind	2007	2.0¢/kWh - 2.5¢/kWh
MI	Lansing Board of Water and Light	GreenWise Electric Power	landfill gas, small hydro	2001	3.0¢/kWh
MI	Traverse City Light and Power	Green Rate	wind	1996	2.0¢/kWh
MI	Upper Peninsula Power Company	NatureWise	wind, landfill gas and animal waste methane	2004	4.0¢/kWh
MI	We Energies	Energy for Tomorrow	wind, landfill gas, hydro	2000	2.04¢/kWh
MN	Alliant Energy	Second Nature	landfill gas, wind	2002	2.0¢/kWh
MN	Austin Utilities, Owatonna Public Utilities, Rochester Public Utilities	SolarChoice	local PV systems	2006	Contribution
MN	Basin Electric Power Cooperative: Minnesota Valley Electric Coop, Sioux Valley Southwestern	Prairie Winds	wind	2002	0.5¢/kWh
MN	Central Minnesota Municipal Power Agency: Blue Earth, Delano, Glencoe, Granite Falls, Janesville, Kenyon, Lake Crystal, Madelia, Mt. Lake, New Ulm, Sleepy Eye, Springfield, Truman, and Windom	Green Energy Program	wind, landfill gas	2000	1.5¢/kWh-2.5¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
MN	Dairyland Power Cooperative: Freeborn-Mower Cooperative / Albert Lea, People's / Rochester, Tri-County / Rushford	Evergreen Renewable Energy Program	hydro, wind, landfill gas, biogas	1998	1.5¢/kWh
MN	Great River Energy (all 28 coops offer program): Agralite, Arrowhead, BENCO Electric, Brown County Rural Electric, Connexus Energy, Co-op Light & Power, Crow Wing Power, Dakota Electric Association, East Central Electric Association, Federated Rural Electric, Goodhue County, Itasca Mantrap Cooperative, Kandiyohi Power Cooperative, Lake Country Power, Lake Region Electric Cooperative, McLeod Cooperative Power, Meeker Cooperative Light & Power, Mille Lacs Electric Cooperative, Minnesota Valley, Nobles Cooperative Electric, North Itasca, Redwood Electric Cooperative, Runestone Electric, South Central Electric Association, Stearns Electric, Steele-Waseca, Todd-Wadena, Wright-Hennepin Electric	Wellspring Renewable Wind Energy Program	wind	1998	1.55¢/kWh-2.0¢/kWh
MN	Minnesota Power	WindSense	wind	2002	2.5¢/kWh
MN	Minnkota Power Cooperative: Beltrami, Clearwater Polk, North Star, PKM, Red Lake, Red River, Roseau, Wild Rice; Northern Municipal Power Agency (10 municipals)	Infinity Wind Energy	wind	1999	0.5¢/kWh
MN	Missouri River Energy Services: Adrian, Alexandria, Barnesville, Benson, Breckenridge, Detroit Lakes, Elbow Lake, Henning, Jackson, Lakefield, Lake Park, Luverne, Madison, Moorhead, Ortonville, St. James, Sauk Centre, Staples, Wadena, Westbrook, Worthington	RiverWinds	wind	2002	2.0¢/kWh-2.5¢/kWh
MN	Moorhead Public Service	Capture the Wind	wind	1998	1.5¢/kWh
MN	Otter Tail Power Company	TailWinds	wind	2002	1.6¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
MN	Southern Minnesota Municipal Power Agency (all 18 munis offer program): Fairmont Public Utilities, Wells Public Utilities, Austin Utilities, Preston Public Utilities, Spring Valley Utilities, Blooming Prairie Public Utilities, Rochester Public Utilities, Owatonna Public Utilities, Waseca Utilities, St. Peter Municipal Utilities, Lake City Utilities, New Prague Utilities Commission, Redwood Falls Public Utilities, Litchfield Public Utilities, Princeton Public Utilities, North Branch Water and Light, Mora Municipal Utilities, Grand Marais Public Utilities	SMMPA Wind Power	wind	2000	1.0¢/kWh
MN	Xcel Energy	WindSource	wind	2003	2.0¢/kWh
MS	TVA: City of Oxford, North East Mississippi Electric Power Asssocation, Starkville Electric System	Green Power Switch	landfill gas, PV, wind	2000	2.67¢/kWh
MO	AmerenUE/3Degrees	Pure Power	75% wind, 25% other renewables	2007	1.5¢/kWh
MO	Associated Electric Cooperative, Inc.: Black River Electric Cooperative, Boone Electric Cooperative, Callaway Electric Cooperative, Co-Mo Electric Cooperative, Crawford Electric Cooperative, Cuivre River Electric Cooperative, Howell-Oregon Electric Cooperative, Intercounty Electric Cooperative, Laclede Electric Cooperative, Lewis County Rural Electric Cooperative, Macon Electric Cooperative, White River Valley Electric Cooperative	varies by utility	biomass, wind	2003	2.0¢/kWh-3.5¢/kWh
MO	City Utilities of Springfield	WindCurrent	wind	2000	5.0¢/kWh
MT	Basin Electric Power Cooperative: Lower Yellowstone, Powder River Energy	Prairie Winds	wind	2000	0.5¢/kWh
MT	Northwestern Energy	E+ Green	wind, PV	2003	2.0¢/kWh
MT	Park Electric Cooperative	Green Power Program	various renewables	2002	1.02¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
MT	Southern Montana Electric Generation and Transmission Cooperative (5 coops offer program): Fergus Electric, Yellowstone Valley, Bear Tooth Electric, Mid Yellowstone, and Tongue River	Environmentally Preferred Power	wind, hydro	2002	1.05¢/kWh
MT	Tri-State Generation & Transmission: Big Horn Rural Electric Company	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh
MT	Vigilante Electric Cooperative	Alternative Renewable Energy Program	wind	2003	1.1¢/kWh
NE	Lincoln Electric System	LES Renewable Energy Program	wind	1998	4.3¢/kWh
NE	Omaha Public Power District	Green Power Program	landfill gas, wind	2002	3.0¢/kWh
NE	Tri-State Generation & Transmission: Chimney Rock Public Power District, Highline Electric Association, Northwest Rural Public Power District	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh
NM	El Paso Electric	Renewable Energy Tariff	wind	2003	3.19¢/kWh
NM	Los Alamos Department of Public Utilities	Green Power	wind	2005	1.8¢/kWh
NM	Public Service of New Mexico	PNM Sky Blue	wind	2003	1.8¢/kWh
NM	Tri-State Generation & Transmission: Central New Mexico Electric Cooperative, Inc., Columbus Electric Cooperative, Inc., Continental Divide Electric Cooperative, Inc., Jemez Mountains Electric Cooperative, Inc., Kit Carson Electric Cooperative, Inc., Northern Rio Arriba Electric Cooperative, Otero County Electric Cooperative, Inc., Sierra Electric Cooperative, Inc., Southwestern Electric Cooperative, Inc., Springer Electric Cooperative, Inc.	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh
NM	Xcel Energy	WindSource	wind	1999	3.0¢/kWh
NC	Dominion North Carolina Power	NC GreenPower	biomass, hydro, landfill gas, PV, wind	2003	2.5¢-4.0¢/kWh
NC	Duke Energy	NC GreenPower	biomass, hydro, landfill gas, PV, wind	2003	2.5¢-4.0¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
NC	ElectriCities: Town of Apex, Town of Cornelius, Fayetteville PWC, Town of Granite Falls, Greenville Utilities, City of High Point, City of Kinston, City of Laurinburg, City of Lexington, City of Monroe, City of New Bern, City of Newton, City of Shelby, City of Statesville, Town of Wake Forest, City of Washington, Town of Waynesville	NC GreenPower	biomass, hydro, landfill gas, PV, wind	2003	2.5¢-4.0¢/kWh
NC	NC Electric Cooperatives (21 of 27 coops offer program): Albemarle Electric Membership Corp., Blue Ridge Electric Membership Corp., Brunswick Electric Membership Corp., Carteret Craven Electric Coop., Central Electric Membership Corp., Edgecombe-Martin County Electric Membership Corp., EnergyUnited, Four County Electric Membership Corp., French Broad Electric Membership Corp., Haywood Electric Membership Corp., Jones-Onslow Electric Membership Corp., Lumbee River Electric Membership Corp., Pee Dee Electric Membership Corp., Piedmont Electric Membership Corp., Randolph Electric Membership Corp., Roanoke Electric Membership Corp., Rutherford Electric Membership Corp., Tideland Electric Membership Corp., Tri-County Electric Membership Corp., Union Power Cooperative, Wake Electric Membership Corp.	NC GreenPower	biomass, hydro, landfill gas, PV, wind	2003	2.5¢-4.0¢/kWh
NC	Progress Energy / CP&L	NC GreenPower	biomass, hydro, landfill gas, PV, wind	2003	2.5¢-4.0¢/kWh
NC	TVA: Mountain Electric Cooperative	Green Power Switch	landfill gas, PV, wind	2000	2.67¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
ND	Basin Electric Power Cooperative: Oliver Mercer Electric Coop, Mor-gran-sou Electric Coop, KEM Electric Coop, North Central Electric Coop, Verendrye, Capital, Northern Plains, Dakota Valley, Burke Divide, Montrail Williams, McKenzie Electric Coop, West Plains, Slope Electric Coop	PrairieWinds	wind	2000	0.5¢/kWh
ND	Minnkota Power Cooperative: Cass County Electric, Cavalier Rural Electric, Nodak Electric; Northern Municipal Power Agency (2 municipals)	Infinity Wind Energy	wind	1999	0.5¢/kWh
ND	Missouri River Energy Services: City of Lakota	RiverWinds	wind	2002	2.0¢/kWh-2.5¢/kWh
NV	Nevada Power	Desert Research Institute's GreenPower Program	Solar PV	unknown	Contribution
NV	Deseret Power: Mt. Wheeler Power Cooperative	Green Way	various	2005	1.95¢/kWh
NV	Sierra Pacific Power	Desert Research Institute's GreenPower Program	Solar PV	unknown	Contribution
OH	American Municipal Power-Ohio / Green Mountain Energy: City of Bowling Green, Cuyahoga Falls, Wyandotte	Nature's Energy	small hydro, landfill gas, wind	2003	1.3¢/kWh-1.5¢/kWh
OH	Buckeye Power	EnviroWatts	landfill gas	2006	2.0¢/kWh
OH	Duke Energy	GoGreen Power	wind, PV, landfill gas, digester gas	2001	2.5¢/kWh
OK	Associated Electric Cooperative, Inc.: Central Rural Electric Cooperative	varies by utility	biomass, wind	2003	2.0¢/kWh-3.5¢/kWh
OK	OG&E Electric Services	OG&E Wind Power	wind	2003	-0.246¢/kWh
OK	Oklahoma Municipal Power Authority: Tonkawa, Altus, Frederick, Okeene, Prague Municipal Utilities and Edmond Electric	Pure & Simple	wind	2004	1.8¢/kWh (-0.45¢/kWh Edmond)

State	Utility Name	Program Name	Type	Start Date	Premium
OK	Western Farmers Electric Cooperative (19 of 19 coops offer program): Alfalfa Electric Cooperative, Caddo Electric Cooperative, Canadian Valley Electric Cooperative, Choctaw Electric Cooperative, Cimmaron Electric Cooperative, Cotton Electric Cooperative, East Central Oklahoma Electric Cooperative, Harmon Electric Cooperative, Kay Electric Cooperative, Kiamichi Electric Cooperative, Kiwash Electric Cooperative, Northfork Electric Cooperative, Northwestern Electric Cooperative, Oklahoma Electric Cooperative, People's Electric Cooperative, Red River Valley Rural Electric Cooperative, Rural Electric Cooperative, Southeastern Electric Cooperative, Southwest Rural Electric Cooperative	WindWorks	wind	2004	0.5¢/kWh
OR	City of Ashland/Bonneville Environmental Foundation	Renewable Pioneers	PV, wind	2003	2.0¢/kWh
OR	Columbia River PUD	Choice Energy	wind	2005	1.5¢/kWh
OR	Emerald People's Utility District/Green Mountain Energy	Choose Renewable Electricity	wind, geothermal	2003	1.2¢/kWh
OR	Eugene Water & Electric Board	EWEB Wind Power	wind	1999	0.91¢/kWh
OR	Eugene Water & Electric Board	EWEB Greenpower	various renewables	2007	1.0¢/kWh-1.5¢/kWh
OR	Idaho Power	Green Power Program	various	2001	0.98¢/kWh
OR	Midstate Electric Cooperative	Environmentally-Preferred Power	wind	1999	2.5¢/kWh
OR	Oregon Trail Electric Cooperative	Green Power	wind	2002	1.5¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
OR	Pacific Northwest Generating Cooperative: Blachly-Lane Electric Cooperative, Central Electric Cooperative, Clearwater Power, Consumers Power, Coos-Curry Electric Cooperative, Douglas Electric Cooperative, Fall River Rural Electric Cooperative, Lost River Electric Cooperative, Raft River Rural Electric Cooperative, Umatilla Electric Cooperative, West Oregon Electric Cooperative, (11 of 15 coops offer program)	Green Power	landfill gas	1998	1.8¢/kWh-2.0¢/kWh
OR	PacifiCorp: Pacific Power	Blue Sky Block	wind	2000	1.95¢/kWh
OR	PacifiCorp: Pacific Power	Blue Sky QS (Commercial Only)	wind	2004	Sliding scale depending on size
OR	PacifiCorp: Pacific Power / 3 Degrees	Blue Sky Usage	wind, biomass, PV	2002	0.78¢/kWh
OR	PacifiCorp: Pacific Power / 3 Degrees	Blue Sky Habitat	wind, biomass, PV	2002	0.78¢/kWh + \$2.50/mo. donation
OR	Portland General Electric Company	Clean Wind Power	wind	2002	1.75¢/kWh
OR	Portland General Electric Company	Clean Wind for Medium to Large Commercial & Industrial Accounts	wind	2003	1.7¢/kWh
OR	Portland General Electric Company / Green Mountain Energy	Renewable Future	wind	2007	1.5¢/kWh
OR	Portland General Electric Company / Green Mountain Energy	Green Source	existing geothermal, hydro, new wind	2002	0.8¢/kWh
SC	Santee Cooper: Aiken Electric Cooperative, Berkeley Electric Cooperative, Blue Ridge Electric, Coastal Electric Cooperative, Edisto Electric Cooperative, Fairfield Electric Cooperative, Horry Electric Cooperative, Laurens Electric Cooperative, Lynches River Electric Cooperative, Marlboro Electric Cooperative, Mid-Carolina Electric Cooperative, Palmetto Electric Cooperative, Pee Dee Electric Cooperative, Santee Electric Cooperative, Tri-County Electric Cooperative, York Electric Cooperative	Green Power Program	landfill gas	2001	3.0¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
SD	Basin Electric Power Cooperative: Bon Homme-Yankton Electric Assn. , Central Electric Cooperative Association, Charles Mix Electric Association, City of Elk Point, Clay-Union Electric Corporation, Codington-Clark Electric Cooperative, Dakota Energy Cooperative, Douglas Electric Cooperative, FEM Electric Association, H-D Electric Cooperative, Kingsbury Electric Cooperative, Lyon-Lincoln Electric Cooperative, McCook Electric Cooperative, Northern Electric Cooperative, Oahe Electric Cooperative, Renville-Sibley Coop. Power Assn., Sioux Valley Southwestern Electric Coop, Southeastern Electric Coop, Union County Electric Cooperative, Whetstone Valley Electric Cooperative, Black Hills Electric Coop, LaCreek Electric Coop, West River Power Association, Butte Electric Coop, Cherry Todd Electric Coop, Moreau Grand, Grand Electric Cooperative, Rosebud	Prairie Winds	wind	2000	0.5¢/kWh
SD	Missouri River Energy Services: City of Vermillion	RiverWinds	wind	2002	2.0¢/kWh- 2.5¢/kWh
SD	Tri-State Generation & Transmission: Niobrara Electric Association, Inc.	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
TN	TVA: Alcoa Electric Department, Appalachian Electric Cooperative, Athens Utility Board, Bristol Tennessee Electric System, Caney Fork Electric Cooperative, City of Maryville Electric Department, Clarksville Department of Electricity, Cleveland Utilities, Clinton Utilities Board, Cookeville Electric Department, Cumberland Electric Membership Corporation, Dickson Electric Department, Duck River Electric Membership Corporation, Elizabethton Electric System, EPB (Chattanooga), Erwin Utilities, Fayetteville Public Utilities, Gibson Electric Membership Corporation, Greeneville Light and Power System, Harriman Utility Board, Johnson City Power Board, Jackson Energy Authority, Knoxville Utilities Board, LaFollette Utilities Board, Lawrenceburg Power System, Lenoir City Utilities Board, Loudon Utilities, McMinnville Electric System, Memphis Light, Gas & Water, Meriwether Lewis Electric Cooperative, Middle Tennessee Electric Membership Corporation, Morristown Power System, Mountain Electric Cooperative, Murfreesboro Electric Department, Nashville Electric Service, Newport Utilities, Oak Ridge Electric Department, Paris Board of Public Utilities, Plateau Electric Cooperative, Powell Valley Electric Cooperative, Pulaski Electric System, Sequachee Valley Electric Cooperative, Sevier County Electric System, Springfield Department of Electricity, Sweetwater Utilities Board, Tullahoma Utilities Board, Upper Cumberland Electric Membership Corporation, Volunteer Energy Cooperative	Green Power Switch	landfill gas, PV, wind	2000	2.67¢/kWh
TX	Austin Energy (City of Austin)	GreenChoice	wind, landfill gas	2000/1997	-0.134¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
TX	Bandera Electric Cooperative	Choose-To-Renew	wind, hydro	2005	-0.114¢/kWh
TX	CPS Energy (San Antonio)	Windtricity	wind	2000	3.0¢/kWh
TX	El Paso Electric Company	Renewable Energy Tariff	wind	2001	1.92¢/kWh
TX	Pedernales Electric Cooperative	Renewable Power	wind, hydro	2006	0.5¢/kWh
UT	City of St. George	Clean Green Power	wind, small hydro	2005	2.95¢/kWh
UT	Deseret Power	GreenWay	various	2004	1.95¢/kWh
UT	PacifiCorp: Rocky Mountain Power	Blue Sky	wind	2003	0.71¢/kWh - 1.94¢/kWh
UT	PacifiCorp: Utah Power	Blue Sky	wind	2000	1.95¢/kWh
UT	Tri-State Generation & Transmission: Empire Electric Association, Inc.	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh
VT	Central Vermont Public Service	CVPS Cow Power	biogas	2004	4.0¢/kWh
VT	Green Mountain Power	Greener Mountain Power	various renewables	2006	4.097¢/kWh-4.38¢/kWh
VT	Green Mountain Power	CoolHome / CoolBusiness	wind, biomass	2002	Contribution
WA	Avista Utilities	Buck-A-Block	wind	2002	0.33¢/kWh
WA	Benton County Public Utility District	Green Power Program	landfill gas, wind, hydro	1999	Contribution
WA	Chelan County PUD	Sustainable Natural Alternative Power (SNAP)	PV, wind, micro hydro	2001	Contribution
WA	Clallam County PUD	Clallam County PUD Green Power Program	landfill gas	2001	0.69¢/kWh
WA	Clark Public Utilities	Green Lights	PV, wind	2002	1.5¢/kWh
WA	Cowlitz PUD	Renewable Resource Energy	wind, PV	2002	2.0¢/kWh
WA	Grant County PUD	Alternative Energy Resources Program	wind	2002	2.0¢/kWh
WA	Grays Harbor PUD	Green Power	wind	2002	3.0¢/kWh
WA	Lewis County PUD	Green Power Energy Rate	wind	2003	2.0¢/kWh
WA	Mason County PUD No. 3	Mason Evergreen Power	wind	2003	1.0¢/kWh
WA	Northen Wasco County PUD	Pure Power	wind	2007	2.5¢/kWh
WA	Orcas Power & Light	Go Green	wind, hydro	1999	3.5¢/kWh
WA	Pacific County PUD	Green Power	landfill gas	2002	1.05¢/kWh
WA	PacifiCorp: Pacific Power	Blue Sky	wind	2000	1.95¢/kWh
WA	Peninsula Light	Green by Choice	wind, hydro, biogas	2002	2.0¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
WA	Puget Sound Energy	Green Power Program	wind, PV, biogas	2002	1.25¢/kWh
WA	Seattle City Light	Seattle Green Power	PV, biogas	2002	Contribution
WA	Seattle City Light	Green Up	wind	2005	1.5¢/kWh
WA	Snohomish County Public Utility District	Planet Power	wind	2002	2.0¢/kWh
WA	Tacoma Power	EverGreen Options	wind	2000	1.2¢/kWh
WI	Alliant Energy	Second Nature	wind, landfill gas	2000	2.0¢/kWh
WI	Dairyland Power Cooperative: Barron Electric, Bayfield/ Iron River, Chippewa / Cornell Valley, Clark / Greenwood, Dunn / Menomonie, Eau Claire / Fall Creek, Jackson / Black River Falls, Jump River / Ladysmith, Oakdale, Pierce-Pepin / Ellsworth, Polk-Burnett / Centuria, Price / Phillips, Richland, Riverland / Arcadia, St. Croix / Baldwin, Scenic Rivers / Lancaster, Taylor / Medford, Vernon / Westby	Evergreen Renewable Energy Program	hydro, wind, landfill gas, biogas	1998	1.5¢/kWh
WI	Great River Energy: Head of the Lakes	Wellspring Renewable Wind Energy Program	wind	1997	1.45¢/kWh-2.0¢/kWh
WI	Madison Gas & Electric	Wind Power Program	wind	1999	2.68¢/kWh
WI	We Energies	Energy for Tomorrow	landfill gas, PV, hydro, wind	1996	1.37¢/kWh
WI	Wisconsin Public Power Inc. (34 of 37 munis offer program): Algoma, Cedarburg, Florence, Kaukauna, Muscoda, Stoughton, Reedsburg, Oconomowoc, Waterloo, Whitehall, Columbus, Hartford, Lake Mills, New Holstein, Richland Center, Boscobel, Cuba City, Hustisford, Sturgeon Bay, Waunakee, Lodi, New London, Plymouth, River Falls, Sun Prairie, Waupun, Eagle River, Jefferson, Menasha, New Richmond, Prairie du Sac, Slinger, Two Rivers, Westby	Renewable Energy Program	small hydro, wind, biogas	2001	2.0¢/kWh
WI	Wisconsin Public Service	NatureWise	wind, landfill gas, biogas	2002	1.86¢/kWh

State	Utility Name	Program Name	Type	Start Date	Premium
WI	Wisconsin Public Service	Solar Wise for Schools	PV in schools	1996	Contribution
WY	Basin Electric Power Cooperative: Powder River Energy	Prairie Winds	wind	2000	0.5¢/kWh
WY	Cheyenne Light, Fuel and Power Company/Bonneville Environmental Foundation	Renewable Premium Program	99% new wind, 1% new solar	2006	3.5¢/kWh
WY	Lower Valley Energy	Green Power	wind	2003	1.167¢/kWh
WY	PacifiCorp: Pacific Power	Blue Sky	wind	2000	1.95¢/kWh
WY	Tri-State Generation & Transmission: Carbon Power & Light, Inc.	Renewable Resource Power Service	wind, hydro	2001	1.25¢/kWh
WY	Yampa Valley Electric Association	Wind Energy Program	wind	1999	3.0¢/kWh

Notes: Utility green pricing programs may only be available to customers located in the utility's service territory.
Source: National Renewable Energy Laboratory, Golden, Colorado.

Appendix F

Table F-1. State-Specific Retail Green Power Product Offerings¹ in Competitive Electricity Markets, October 2007

State	Company	Product Name	Resource Mix ²	Certification
CT	CL&P/United Illuminating/Community Energy (CT Clean Energy Options Program)	NewWind Energy/Landfill Gas 50% or 100% of usage	50% new wind, 50% landfill gas	—
CT	CL&P/United Illuminating/Sterling Planet (CT Clean Energy Options Program)	Sterling Select 50% or 100% of usage	33% new wind, 33% small hydro, 34% landfill gas	—
CT	Levco (CL&P and UI customers only)	100% Renewable Electricity Program	100% CT Class II qualifying renewables	—
DC	PEPCO Energy Services (3)	Green Electricity 100% of usage	landfill gas	—
DC	PEPCO Energy Services (3)	NewWind Energy 100% of usage	new wind	—
DC	Washington Gas Energy Services / Community Energy (3)	1-Year Fixed Price Electricity with 5% Wind	5% new wind	—
MA	Cape Light Compact	Cape Light Compact Green 50% or 100%*	75% small hydro, 24% new wind or landfill gas, 1% new solar	—
MA	Massachusetts Electric / Nantucket Electric / Clear Sky Power (5)	Clear Sky Home*	100% biomass	—
MA	Massachusetts Electric/Nantucket Electric/Community Energy (5)	New Wind Energy and Water 50% or 100% of usage*	70% small hydro, 30% new wind	Green-e
MA	Massachusetts Electric/Nantucket Electric/Mass Energy Consumers Alliance	New England GreenStart 50% or 100% of usage*	75% small hydro, 25% new biomass, wind, and solar	—
MA	Massachusetts Electric/Nantucket Electric/Sterling Planet (5)	MA Clean Choice*	33% new wind, 33% new landfill gas, 33% small hydro	Environmental Resources Trust
MD	PEPCO Energy Services	Green Electricity 100% of usage	landfill gas	—
MD	PEPCO Energy Services	NewWind Energy 100% of usage	new wind	—
MD	Washington Gas Energy Services / Community Energy (4)	1-Year Fixed Price Electricity with 5% Wind	5% wind	—
ME	Kennebunk Light and Power District	Village Green	hydro, landfill gas	—
ME	Maine Renewable Energy/Maine Interfaith Power & Light	Maine Clean Power	100% low impact hydro	—

State	Company	Product Name	Resource Mix ²	Certification
ME	Maine Renewable Energy/Maine Interfaith Power & Light	Maine Clean Power Plus	80% low impact hydro, 20% wind	—
NJ	PSE&G/JCP&L/Atlantic City Electric/Rockland Electric/Community Energy	NJ Clean Power Choice - Community Energy	50% wind, 49% low impact hydro, 1% solar	—
NJ	PSE&G/JCP&L/Atlantic City Electric/Rockland Electric/Green Mountain Energy	NJ Clean Power Choice - Green Mountain Energy	50% wind, 50% low impact hydro	—
NJ	PSE&G/JCP&L/Atlantic City Electric/Rockland Electric/Jersey-Atlantic Wind	NJ Clean Power Choice - Wind	100-kWh blocks of new wind	—
NJ	PSE&G/JCP&L/Atlantic City Electric/Rockland Electric/Jersey-Atlantic Wind	NJ Clean Power Choice - Wind and Water	50% wind, 50% low impact hydro	—
NJ	PSE&G/JCP&L/Atlantic City Electric/Rockland Electric/Sterling Planet	NJ Clean Power Choice - Sterling Select	33% wind, 33% small hydro, 34% landfill gas	Environmental Resources trust
NY	Accent Energy	GoGreen (ConEd, Central Hudson and NIMO only)	100% NY hydro	—
NY	Accent Energy	GoGreen Premium (ConEd, Central Hudson and NIMO only)	100% wind	Green-e
NY	ConEdison Solutions / Community Energy	GREEN Power	35% new wind, 65% small hydro	Green-e
NY	Econnergy	Keep It Green	100% wind	—
NY	Energy Cooperative of New York (6)	Renewable Electricity	25% new wind, 75% landfill gas	—
NY	IDT Energy	Buy Green	100% hydro	—
NY	Long Island Power Authority / Community Energy	New Wind Energy	new wind	—
NY	Long Island Power Authority / Community Energy	New Wind Energy/Small Hydro	60% new wind, 40% small hydro	—
NY	Long Island Power Authority / EnviroGen	Green Power Program	75% landfill gas, 25% small hydro	—
NY	Long Island Power Authority / Sterling Planet	New York Clean	55% small hydro, 35% bioenergy, 10% wind	Environmental Resources Trust
NY	Long Island Power Authority / Sterling Planet	Sterling Green	40% new wind, 30% small hydro, 30% bioenergy	Environmental Resources Trust
NY	National Grid / Community Energy	60% New Wind Energy and 40% Small Hydro	60% new wind, 40% hydro	—
NY	National Grid / Community Energy	NewWind Energy	100% new wind	—
NY	National Grid / EnviroGen	Think Green!	75% landfill gas, 25% low impact hydro	—

State	Company	Product Name	Resource Mix ²	Certification
NY	National Grid / Green Mountain Energy	Green Mountain Energy Electricity	50% small hydro, 50% wind	Green-e
NY	National Grid / Sterling Planet	Sterling Green	50% wind, 50% small hydro	Environmental Resources Trust
NY	NYSEG/Community Energy	Catch the Wind/New Wind Energy	new wind	—
NY	Rochester Gas & Electric/Community Energy	Catch the Wind/NewWind Energy	100-kWh blocks of new wind	—
NY	Sterling Planet	NY Clean Choice	40% new wind, 30% small hydro, 30% bioenergy	Environmental Resources Trust
NY	Suburban Energy Services /Sterling Planet	Sterling Green Renewable Electricity	40% new wind, 30% small hydro, 30% bioenergy	Environmental Resources Trust
PA	Commerce Energy	Clear Choice 100% Wind (PECO only)	new wind	Green-e
PA	Energy Cooperative of Pennsylvania	EcoChoice 100	89% landfill gas, 10% wind, 1% solar	Green-e
PA	PECO Energy/Community Energy	PECO Wind	100-kWh blocks of new wind	—
RI	Narragansett Electric / Clear Sky Power	Clear Sky Home	100% new bioenergy	—
RI	Narragansett Electric / Community Energy, Inc.	40% NewWind/60% Small Hydro	60% small hydro, 40% new wind	—
RI	Narragansett Electric / Community Energy, Inc.	50% NewWind/50% Small Hydro	50% small hydro, 50% new wind	—
RI	Narragansett Electric / People's Power & Light	New England GreenStart RI 50% or 100% of usage	70% small hydro, 17% bioenergy, 13% wind and solar	—
RI	Narragansett Electric / Sterling Planet	Sterling Supreme 100%	40% small hydro, 25% biomass, 25% new solar, 10% wind	Environmental Resources Trust
TX	Commerce Energy	Clear Choice All-In (12-mo fixed rate)	100% wind	Green-e
TX	Commerce Energy	Clear Choice All-In Plus (24-mo fixed rate)	100% wind	Green-e
TX	First Choice Power	Simply Better Renewable	100% renewable	—
TX	Gexa Energy	Gexa Green	100% renewable	—
TX	Green Mountain Energy Company	100% Wind: Month-to-Month	wind	—
TX	Green Mountain Energy Company	Pollution Free	10% wind, 90% hydro	—
TX	Green Mountain Energy Company	Pollution Free: Reliable Rate	10% wind, 90% hydro	—
TX	Reliant Energy	Renewable Plan	100% wind	—
TX	TXU Energy	TXU Energy 100%	100% wind	—

State	Company	Product Name	Resource Mix ²	Certification
		EarthWise		
TX	TXU Energy	TXU Energy 100% EarthWise 18	10% wind	—
VA	PEPCO Energy Services (7)	Green Electricity 100% of usage	landfill gas	—
VA	PEPCO Energy Services (7)	NewWind Energy 100% of usage	new wind	—

Source: National Renewable Energy Laboratory

* The Massachusetts Technology Collaborative's [Clean Energy Choice](#) (CEC) program provides local matching grants for clean energy projects for residents who make a voluntary offering.

¹ As product prices fluctuate, please contact the listed marketers to get accurate price quotes for products.

² New is defined as operating or repowered after January 1, 1997 based on the *Green-e* standard.

³ Offered in PEPCO service territory.

⁴ Product offered in Baltimore Gas and Electric and PEPCO service territories.

⁵ Products are only available in the National Grid service territory.

⁶ Offered in Niagara Mohawk and NYSEG service territories.

⁷ Products are available in Dominion Virginia Power service territory.

Appendix G

Table G-1. Renewable Energy Certificate Retail Products, October 2007

Certificate Marketer	Product Name	Renewable Resources	Location of Renewable Resources	Residential Price Premiums*	Certification
3Degrees	Renewable Energy Certificates	100% new wind	Nationwide	2.0¢/kWh	Green-e
3 Phases Renewables	Green Certificates	100% biomass, geothermal, hydro, solar, wind	Nationwide	1.2¢/kWh	Green-e
Bonneville Environmental Foundation	Denali Green Tags (Alaska only)	100% new wind	10% Alaska, 90% Nationwide	2.0¢/kWh	Green-e
Bonneville Environmental Foundation	Green Tags Blend	90% new wind, 10% new solar	Nationwide	2.4¢/kWh	Green-e
Bonneville Environmental Foundation	Green Tags Solar	100% new solar	Nationwide	5.6¢/kWh	Green-e
Bonneville Environmental Foundation	Green Tags Wind	100% wind	Nationwide	2.0¢/kWh	Green-e
Bonneville Environmental Foundation	Zephyr Energy (Kansas Only)	50% new low-impact hydropower	Mid-West, West	2.0¢/kWh	Green-e
Carbonfund.org	Carbon Offsets	wind, solar, biomass, efficiency, reforestation	Nationwide	\$5.50/ton CO2 (donation)	Environmental Resource Trust**
Carbonfund.org	MyGreenFuture	99% new wind, 1% new solar	Nationwide	0.5¢/kWh	Green-e
Choose Renewables	CleanWatts	100% new wind	Nationwide	1.7¢/kWh	Green-e
Clean and Green	Clean and Green Membership	100% new wind	Nationwide	3.0¢/kWh	Green-e
Community Energy	NewWind Energy	100% new wind	Nationwide	2.5¢/kWh	Green-e
Conservation Services Group	ClimateSAVE	95% new wind/hydro, 5% new solar	Kansas, New England (wind/hydro), New York (solar)	1.65¢/kWh - 1.75¢/kWh	Green-e
Maine Interfaith Power & Light	Maine WindWatts	100% new wind	Maine	2.0¢/kWh	—
Maine Interfaith Power & Light/BEF	Green Tags (supplied by BEF)	99% new wind, 1% new solar	Nationwide	2.0¢/kWh	—
Mass Energy Consumers	New England Wind Fund	100% new wind	New England	~5.0¢/kWh (donation)	—

Alliance					
NativeEnergy	Coo/Driver	New wind and biogas	Nationwide	~1.2¢/kWh, \$12 per ton CO2 avoided	***
NativeEnergy	Coo/Watts	100% new wind	Nationwide	0.8¢/kWh	Green-e
NativeEnergy	WindBuilders	100% new wind	South Dakota, North Dakota	~1.2¢/kWh, \$12 per ton of CO2 avoided	***
NativeEnergy	Remoovable Energy	100% new biogas	Pennsylvania	0.8¢/kWh-1.0¢/kWh	***
Pacific Gas & Electric	Climate Smart	various local projects	California	\$4.31/mo.	—
Premier Energy Marketing	Renewable Energy Credits	100% wind	Nationwide	1.5¢/kWh-2.0¢/kWh	Green-e
Renewable Choice Energy	American Wind	100% new wind	Nationwide	2.5¢/kWh	Green-e
Renewable Ventures	PVUSA Solar Green Certificates	100% solar	California	3.3¢/kWh	Green-e
SKY energy, Inc.	Wind-e Renewable Energy	100% new wind	Nationwide	2.4¢/kWh	Green-e
Sterling Planet	Sterling Green Energy	100% new wind, hydro, geothermal, methane, or bioenergy	Nationwide	1.5¢/kWh	—
Sterling Planet	Sterling Solar	100% new solar	Nationwide	7.5¢/kWh	—
TerraPass Inc.	TerraPass	Various (including efficiency and CO2 offsets)	Nationwide	~\$10/ton CO2	—
Waverly Light & Power	Iowa Energy Tags	100% wind	Iowa	2.0¢/kWh	—
WindCurrent	Chesapeake Windcurrent	100% new wind	Mid-Atlantic States	2.5¢/kWh	Green-e

Notes:

*Product prices are updated as of July 2006. Premium may also apply to small commercial customers. Large users may be able to negotiate price premiums.

**Product is sourced from Green-e and ERT-certified RECs. ERT also certifies the entire product portfolio.

***The Climate Neutral Network certifies the methodology used to calculate the CO₂ emissions offset.

NA = Not applicable.

Source: National Renewable Energy Laboratory

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