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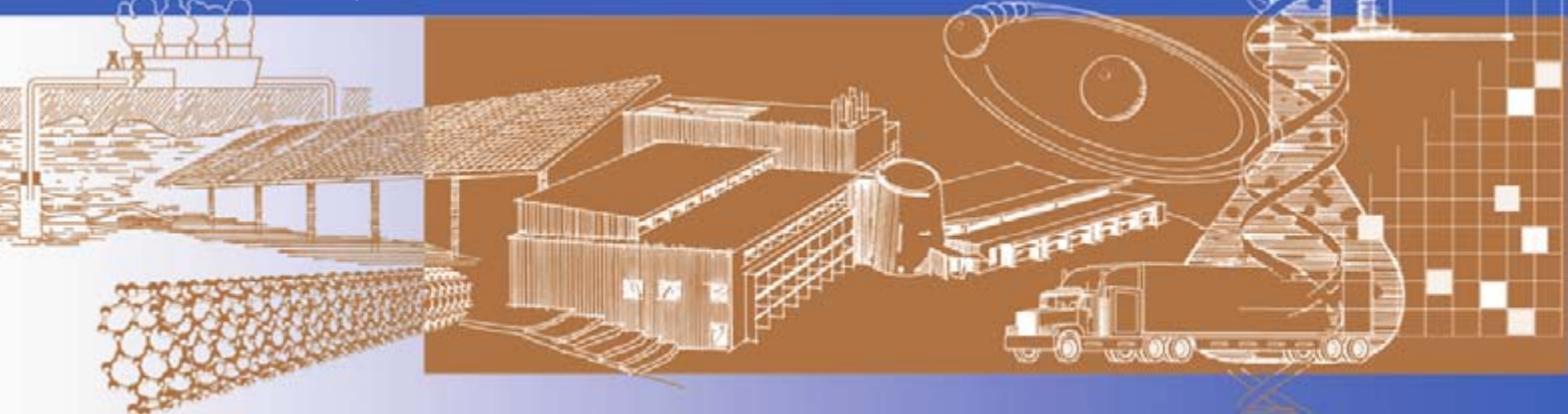
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Trends in Utility Green Pricing Programs (2005)

Lori Bird and Elizabeth Brown

Technical Report
NREL/TP-640-40777
October 2006

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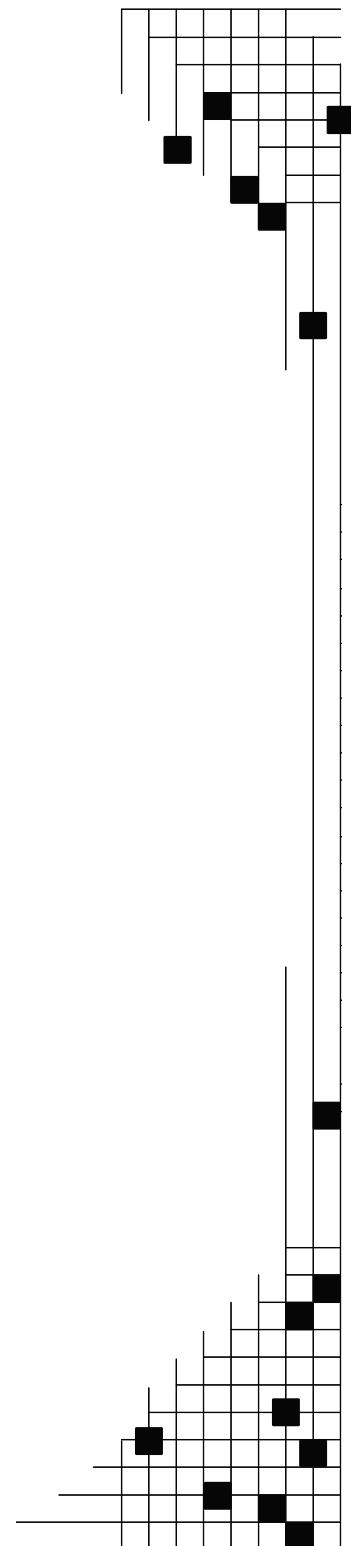
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Executive Summary

In the early 1990s, only a handful of utilities offered their customers a choice of purchasing electricity generated from renewable energy sources. Today, more than 600 utilities—or about 20% of all utilities nationally—provide their customers a “green power” option. Because some utilities offer programs in conjunction with cooperative associations or other publicly owned power entities, the number of distinct programs totals more than 130. Through these programs, more than 50 million customers have the ability to purchase renewable energy to meet some portion or all of their electricity needs—or make contributions to support the development of renewable energy resources. Typically, customers pay a premium above standard electricity rates for this service.

This report presents year-end 2005 data on utility green pricing programs, and examines trends in consumer response and program implementation over time. The data in this report, which were obtained via a questionnaire distributed to utility green pricing program managers, can be used by utilities to benchmark the success of their green power programs. It is important to note that this report covers only a portion of voluntary markets for renewable energy. It does not cover green power sold by independent marketers except for cases in which the marketers work in conjunction with utilities or default electricity suppliers.¹

At the end of 2005, green pricing sales were equivalent to more than 740 MW of new renewable energy capacity. Thus, green pricing continues to be a viable strategy for supporting the development of new renewable energy sources. While utility green power programs continue to exhibit strong growth in overall sales, current success can be attributed to a relatively small number of programs.

The following is a summary of key findings from this analysis.

Consumer Response

- Despite a year in which electricity costs increased substantially throughout the country, sales of renewable energy through utility green power programs continued to exhibit strong growth. Collectively, utilities sold nearly 3 billion kilowatt-hours (kWh) of green power to more than 450,000 customers in 2005. A relatively small number of programs still account for the majority of utility green power sales and customers, with the top 10 programs accounting for about 70% of sales and 65% of customers, similar to 2004.
- In restructured electricity markets, both the number of customers and sales of renewable energy through utility/marketer programs more than doubled during 2005. This rapid growth may be attributed to the early stage of these programs as well as the fact that they are promoted by independent companies specializing in renewable energy marketing, which have a vested financial interest in their success.
- In traditionally regulated electricity markets, sales through utility green pricing programs increased 33% following annual growth rates in excess of 40% in 2003 and 2004. The number of customers purchasing green power increased by 20%, a slower pace than sales.

¹ For data on the entire voluntary renewable energy market, see Bird and Swezey (2005a).

- The average participation rate across all green pricing programs increased slightly to 1.5%. The top 10 utility green pricing programs exhibited participation rates ranging from 5% to 14%.
- The fraction of customers dropping out of green pricing programs fell to a median of 5% in 2005 from nearly 9% in 2004, reversing a trend of increasing dropout rates in previous years.

Renewable Energy Supplies

- In 2005, about one-third of utilities owned the renewable energy generation sources used to supply a significant portion of the energy sold to their green pricing customers. The remainder purchase renewable power or renewable energy certificates (RECs) from third parties to supply their programs.
- The use of RECs continued to climb, with utilities purchasing more than 1 billion kWh of RECs to serve green pricing customers in 2005, nearly a 50% increase from 2004. RECs represented more than 40% of all green pricing sales in 2005.
- The bulk of green pricing sales (87%) were sourced from “new”² renewable energy facilities. Wind energy accounted for 76% of sales, followed by biomass (17%), hydro (4%), geothermal (3%), and solar (0.2%).
- Renewable energy sales to green pricing customers represent a capacity equivalent of more than 740 MW of new renewable energy sources.

Pricing and Revenues

- The average price premium charged for green power through green pricing programs continued to decline, falling to 2.36¢/kWh in 2005 from 2.45¢/kWh in 2004. Since 2000, the premium has declined at an annual average rate of more than 7%.
- A number of utilities reduced their green pricing premiums because of higher fossil fuel costs or because they were able to enter into more favorable contracts for renewable energy supplies. Several other utilities reported that renewable energy was offered at rates less than standard electricity service because their green power customers are exempt from rate increases resulting from fossil fuel cost changes.
- Several utilities introduced lower price premiums for bulk purchases by large, nonresidential purchasers.
- In 2005, residential customers paid less than \$5 per month, on average, for green power through utility programs. This represents a decline from previous years that can be primarily attributed to reductions in premiums or programs that protect customers from fuel cost increases.

Marketing

- As might be expected, utility expenditures on marketing and administration for green power programs vary by utility size. Utilities with more than 500,000 customers reported a wide range of marketing expenditures, with one-third spending less than \$50,000 and

² New is defined as renewable resources placed in service or repowered after January 1, 1997, consistent with the definition used by the Green-e certification program http://www.green-e.org/what_is/standard/standard.html and other programs such as the Environmental Protection Agency’s Green Power Partnership.

about 55% spending more than \$100,000. Only six utilities reported spending more than \$250,000 on marketing.

- Utilities reported a median cost of \$25 for acquiring new residential customers, down from \$30 reported in previous years. The top performers³ reported similar costs.
- Fewer than half of utilities reported that nonparticipants pay some portion of green pricing program costs, down from two-thirds in 2004. The most common reason cited is that the utility spreads some of the marketing and administrative costs among all ratepayers.
- On average, utilities used at least five different marketing techniques to publicize their green pricing program in 2005, while the top performers used an average of eight.⁴
- The marketing techniques that utilities ranked as most effective include bangtails,⁴ community challenges, bill inserts, door-to-door marketing, direct sales (to commercial accounts), direct mail, and publicity. As in the past, the techniques that received the highest scores for effectiveness from program managers are not necessarily the most commonly used.

Program Implementation

- Utilities ranked the following as among the most effective enrollment methods: mail-in cards, check boxes on the utility bill, and other strategies (enrolling customers through account representatives, retail partners, or phone contractors).
- Fewer than one-third of utilities impose a minimum subscription requirement on their green pricing customers, with one year being the most common contract requirement.
- Just more than half of utilities reported that they had conducted customer research to aid in the design or implementation of their green pricing programs; but only one-third of utilities reported performing a program evaluation, compared to about 60% of the top performers.
- It is more common for top-performing utilities to provide additional program benefits, such as recognizing business customers in local media, recognizing other customers with plaques, providing decals for display in store windows, providing discounts or promotions at local businesses, protecting customers from fuel cost increases, and providing energy efficiency products. The top performers reported providing an average of six such benefits to program participants compared to three for all programs.

³ The top performers are defined as those that were among the top 10 programs for customer participants, green power sales, and customer participation rate, according to the NREL rankings (see Appendix C).

⁴ Bangtails are advertisements that are attached to mail-in envelopes; they must be ripped off the envelope before it can be placed in the mail.

Introduction

Utilities first began offering consumers a choice of purchasing electricity generated from renewable energy sources in the early 1990s. Since then, the number of U.S. utilities offering green pricing programs has steadily grown. Today, more than 600 utilities—or about 20% of all utilities nationally—offer their customers green power options. Because some of these utilities offer programs in conjunction with cooperative associations or other public power entities, the number of distinct programs is about 130. Through these programs, more than 50 million customers have the ability to purchase renewable energy to meet some portion or all of their electricity needs, or make contributions to support the development of renewable energy resources. Typically, customers must pay a premium above standard electricity rates for this service.

Since 1999, the National Renewable Energy Laboratory (NREL) has compiled data on utility green pricing programs on an annual basis. Initially, the data covered consumer response and program-design features, such as participation and retention rates, price premiums, program structures, enrollment requirements, and new renewable energy capacity installed to supply green pricing programs.⁵ Beginning in 2002, NREL added data on marketing and program implementation, covering areas such as customer-acquisition costs, marketing strategies and budgets, program-evaluation efforts, procurement of supplies, and methods of enrolling and providing value to customers.

In 2004 and 2005, the data collection efforts were expanded to include utility programs implemented in conjunction with independent marketers in restructured electricity markets. Because of significant differences in the design and implementation of these programs, data on programs offered in restructured markets are only included in estimates of total sales and customers, except as noted. All other data on pricing, program design, marketing, and implementation are for utility programs offered in traditionally regulated electricity markets only, which we refer to as “green pricing.” The 2002, 2003, and 2004 data are presented in detail in Bird et al. (2004), Bird and Cardinal (2004), and Bird and Brown (2005), respectively.

This report presents detailed data on utility green pricing programs compiled for year-end 2005, and examines trends in consumer response and program implementation since 1999. The data provided in this report can also be used by utilities to benchmark the success of their green pricing programs. It is important to note that this report covers only a portion of voluntary markets for renewable energy. It does not cover green power sold by independent renewable energy marketers except for cases in which the marketers work in conjunction with utilities.⁶

Data Collection and Methodology

The information presented in this report is based on data provided to NREL by utilities operating green power programs. In 2005, a questionnaire was distributed via e-mail to 140 green power program managers representing 129 individual green power programs (see **Appendix A** for the

⁵ The results are summarized in Swezey and Bird 1999; 2000.

⁶ For data on the entire voluntary renewable energy market, see Bird and Swezey 2005a.

questionnaire and **Appendix B** for a list of utilities that offer green pricing programs). In a few instances, the questionnaire was distributed to several distribution utilities that participate in a single green pricing program offered through a generation and transmission cooperative or public power supplier. This was done because some power suppliers do not collect data from participating distribution utilities or are not able to provide data on marketing and program implementation. As in 2004, data were collected from a number of utility programs that are offered in conjunction with third-party marketers in states that have implemented retail competition. These responses were only included in the estimates of total utility green power customers and sales. Responses were received for 99 programs (93 in regulated markets, and 6 in competitive markets), yielding an overall active program response rate of 71%. The response rate, excluding programs offered in competitive electricity markets, was 70%. Where possible, data gaps were filled with information obtained from utility Web sites, follow-up phone calls, and published reports (Washington CTED/UTC 2005), as well as data received in previous years.

Customer Participation

Number of Customers

At the end of 2005, more than 450,000 customers were participating in utility green power programs nationally, including programs offered in regulated and restructured electricity markets (**Table 1**).⁷ As in the past, a relatively small number of green power programs account for the majority of customers, with just 10 programs accounting for 65% of all participants (**Appendix C**).⁸

Table 1: Number of Participants in Utility Green Power Programs (in Regulated and Competitive Electricity Markets)

	2004	2005	% Change
Utility Green Pricing Programs in Regulated Markets	331,800	394,700	19%
Utility Programs in Restructured Electricity Markets	29,400	60,800	107%
Total	361,200	455,500	26%

The number of customers participating in utility/marketer programs in restructured electricity markets more than doubled during 2005. These programs differ from utility programs offered in traditionally regulated electricity markets in that they involve independent marketers working in conjunction with the incumbent utilities (or default service providers) to offer renewable energy products to retail consumers. Under these programs, customers can purchase green power without switching from default or standard offer service. Examples include the Connecticut *CleanEnergyOptions* program and the National Grid *GreenUp* program. In general, these

⁷ NREL obtained consumer response data for about 70% of utility green pricing programs in 2005, including all of the major programs. The remaining programs, which are smaller in size, do not have a large impact on overall participant numbers.

⁸ 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>.

programs are relatively young, which may partially explain the high growth rates. Furthermore, the fact that these programs are primarily promoted by companies specializing in renewable energy marketing and financially vested in the success of the programs may also explain their rapid growth.

Table 2 presents the number of customers participating in utility green pricing programs offered in traditionally regulated electricity markets since 1999. From 1999 to 2005, the number of customer participants increased nearly sixfold, with growth rates during the past several years ranging from 16% to 25%.

Table 2: Estimated Cumulative Number of Customers Participating in Utility Green Pricing Programs (Regulated Electricity Markets Only)

Customer Segment	1999	2000	2001	2002	2003	2004	2005
Residential	n/a*	131,000	166,300	224,500	258,700	323,700	383,400
Nonresidential	n/a*	1,700	2,500	3,900	6,500	8,100	11,300
Total	66,900	132,700	168,800	228,400	265,000	331,800	394,700
% Total Annual Growth	n/a	98%	27%	35%	16%	25%	19%
% Residential Growth	n/a	n/a	27%	35%	15%	25%	18%
% Nonresidential Growth	n/a	n/a	47%	56%	67%	25%	40%

*Information on customer segments was not collected in 1999.

Table 2 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. During 2005, the number of residential and nonresidential customers grew at different rates, with the nonresidential sector growing by 39% and the residential sector by 18%. This finding is consistent with sector-specific growth rates in previous years, with the exception of 2004 when both residential and nonresidential customers grew by about 25%. This trend of increasing nonresidential purchasers is having a significant impact on overall sales volume, as the nonresidential purchasing quantities can be quite large as compared to residential purchases.

Table 3 presents summary statistics on the number of customers participating in green power programs, including programs in regulated and competitive electricity markets. The full range of utility sizes and program sizes is represented, illustrating that half of available programs in 2005 had fewer than 1,600 participants, and the top 25% of programs, or 75th percentile (in terms of participants) had greater than 4,300 participants. While the average number of customers from 2004 to 2005 increased, the quartile distribution change illustrates an increased number of programs with fewer participants. This may reflect a larger number of programs offered by smaller utilities.

Table 3: Number of Customer Participants by Program, 2004-2005

	2004	2005
25 th percentile	400	400
50 th percentile	1,900	1,600
75 th percentile	4,600	4,300
Average of all programs	4,400	4,800
Total Respondents	76	102

In 2005, four programs had sold all of the green power available under the program and were no longer actively seeking new customers—this was an increase from two fully subscribed programs in 2004. Three of these programs maintain waiting lists.

Participation Rates

At the end of 2005, the average rate of participation in utility green pricing programs among eligible utility customers was 1.5%, with a median of 1.0% (**Table 4 and Table 5**). These industry-wide rates have shown very little change in recent years. The 10 programs with the highest participation rates achieved participation rates of between 5% and 14% in 2005, compared to 3% to 6% in 2002 (**Appendix C**).⁹ Although the upper end of the range remains above 10%, average participation rates remain well below penetration rates predicted by utility market research surveys (Farhar 1999).

Some possible explanations for the lack of improvement in overall participation rates include: 1) a general lack of awareness among customers, 2) lack of sustained marketing efforts on the part of some utilities, 3) a discrepancy between what customers report in surveys and what they actually do when presented with an option, 4) poor value propositions or product quality, and 5) the addition of new programs each year, which are averaged with the performance of more established programs (Holt and Holt 2004, Swezey and Bird 2001).

Table 4: Customer Participation Rates in Utility Green Pricing Programs

Participation Rate	1999	2000	2001	2002	2003	2004	2005
Average	0.9%	1.2%	1.3%	1.2%	1.2%	1.3%	1.5%
Median	0.8%	0.7%	0.7%	0.8%	0.9%	1.0%	1.0%
Top 10 programs	2.1%-4.7%*	2.6%-7.3%	3.0%-7.0%	3.0%-5.8%	3.9%-11.1%	3.8%-14.5%	4.6%-13.6%

*Data for April 2000

⁹ From 2000 to 2002, the high end of the range declined because the utility with the highest participation rate (Moorhead Public Service) experienced an increase in its overall customer base, while the number of participants in its green pricing program remained steady. The program was fully subscribed in 2000, and the utility has not attempted to expand it. Likewise, the high end of the range declined from 2004 to 2005, because the number of participants in the Lenox Municipal Utilities green power program essentially remained constant, while its customer base increased.

Table 5: Customer Participation Rates in Utility Green Pricing Programs, 2004-2005

Participation Rate	2004	2005
25 th Percentile	0.3%	0.4%
50 th Percentile (Median)	1.0%	1.0%
75 th Percentile	1.4%	1.8%

Table 6 shows that across all utilities, the average participation rate for green pricing programs in 2005 for residential and nonresidential customers was 1.6% and 0.7%, respectively. Median participation rates were 1.2% and 0.2%, respectively (**Table 7**). The lower participation rates among nonresidential customers may be explained, in part, by the fact that some programs place less emphasis on the nonresidential sector. Also, nonresidential customers as a whole may be more price-sensitive and perhaps less willing to pay a premium than residential consumers.

Table 6 reveals slight differences in average participation rates among programs offered by investor-owned utilities (IOUs), municipal or public utilities, and cooperatives. Although IOU participation rates have increased over time, IOUs still reported the lowest average participation rates among all utility types. However, the differences diminish or disappear when the median rates are compared.

Table 6: Average Green Pricing Participation Rates by Utility Type

Utility Type	Number of Responses			Residential Customers Average (%)			Nonresidential Customers Average (%)			All Customers Average (%)		
	'03	'04	'05	'03	'04	'05	'03	'04	'05	'03	'04	'05
All Utilities	75	80	89	1.4	1.4	1.6	0.5	0.4	0.7	1.2	1.3	1.5
Co-ops	13	13	17	1.7	1.7	1.7	0.6	0.6	0.7	1.6	1.5	1.5
Public	36	38	45	1.5	1.6	1.7	0.5	0.5	0.9	1.3	1.4	1.6
Investor-owned	26	29	27	1.0	1.1	1.3	0.3	0.3	0.3	0.8	1.0	1.2

Table 7: Median Green Pricing Participation Rates by Utility Type

Utility Type	Number of Responses			Residential Customers Median (%)			Nonresidential Customers Median (%)			All Customers Median (%)		
	'03	'04	'05	'03	'04	'05	'03	'04	'05	'03	'04	'05
All Utilities	75	80	89	1.0	1.1	1.2	0.2	0.2	0.2	0.9	1.0	1.0
Co-ops	13	13	17	1.1	1.2	1.2	0.01	0.1	0.3	1.0	1.0	1.0
Public	36	38	45	1.1	1.1	1.1	0.2	0.2	0.2	0.2	0.8	1.0
Investor-owned	26	29	27	0.9	1.0	1.2	0.1	0.1	0.1	0.7	0.9	1.0

Retention of Customers

In 2005, utilities reported that an average of 6.5% and a median 5.1% of customers dropped out of green pricing programs, reversing the trend of increasing rates during the past several years (**Table 8**). This finding is somewhat surprising in a year in which customers throughout the country faced higher electricity and energy prices. Although the reason for the improvement in customer retention is not clear, this finding suggests that customers tend to be “sticky” and maintain participation in green power programs, despite other cost increases.

Historically, utilities that have reported higher-than-average turnover rates among green power customers cite high turnover among all utility customers; for example, several of these utilities have service territories that include large universities where high customer turnover is recurrent. One utility also cited particularly high attrition rates after announcing plans to build a new coal-fired power plant, which regional environmental organizations opposed. And a few utilities have experienced higher-than-average decreases in enrollment as a result of general rate increases.

One effective strategy for reducing attrition is retaining customer participants in the program when they move within the utility service territory. Also, continuing to communicate the success and benefits of the program to consumers may help alleviate problems with attrition. Consumers may need to be reminded periodically of the value of the program and the impact that their expenditures have had. Finally, offering benefits such as exempting customers from fossil fuel cost increases may help retain customers.

Table 8: Fraction of Customers Dropping Out of Green Pricing Programs

	2002	2003	2004	2005
Median	2.5%	6.6%	8.8%	5.1%
Average	4.3%	7.1%	9.8%	6.5%

Renewable Energy Sales and Supplies

Green Power Sales and Revenues

Collectively, utilities sold nearly 3 billion kilowatt-hours (kWh), or about 313 average megawatts (aMW), of green power to customers in 2005 (**Table 9**). Sales of renewable energy through utility programs in competitive electricity markets more than doubled during 2005. The fact that these programs are implemented in conjunction with competitive marketers specializing in renewable energy marketing—and that many are relatively young—may explain the significantly higher growth rates.

The 10 top-performing green pricing programs represented 71% of total sales, with one program (Austin Energy) accounting for 16% of all sales (**Appendix C**). Austin Energy’s sales success stems from the fact that it allows customers to lock in the price of green energy at a fixed rate for up to 10 years, which has been particularly popular among nonresidential customers. Overall,

nonresidential customers represented about 3% of customers, but represented about one-third of total program sales.

Table 9: Sales of Renewable Energy through Utility Green Power Programs in Regulated and Competitive Electricity Markets (million kWh)

	2004	2005	% Change
Utility Green Pricing Programs in Regulated Markets	1,839	2,448	33%
Utility Programs in Competitive Electricity Markets	136	291	114%
Total	1,975	2,738	39%

Table 10 presents sales of renewable energy through utility green pricing programs in regulated electricity markets over time. Green pricing program sales to all customer classes grew by 33% in 2005, compared to rates in excess of 40% during the past several years. The growth in sales can be attributed to the larger number of customers purchasing green power as well as larger purchases by nonresidential customers (**Table 11**). On average, residential customers purchased an average of about 4,200 kWh of green power annually in 2005, while nonresidential customers purchased nearly 75,000 kWh.¹⁰ Average purchases by residential customers have increased substantially since 2001 from 2,400 kWh per year to 4,200 kWh per year. This increase is likely due to a larger number of programs that require customers to purchase green power for 100% or a more substantial fraction of their electricity use, as well as decreases in the price of green power.

Table 10: Annual Sales of Green Energy through Utility Green Pricing Programs (Regulated Electricity Markets Only), millions of kWh

	2000	2001	2002	2003	2004	2005
Sales to Residential Customers	*	400	661	874	1,295	1,606
Sales to Nonresidential Customers	*	173	234	410	544	842
Total Sales to All Customers	454	573	895	1,284	1,839	2,448
% Annual Growth in Total Sales	*	26%	56%	43%	43%	33%
% Nonresidential of Total Sales	*	30%	26%	32%	30%	34%

*Sales information for customer segments not available for 2000.

Table 11: Average Purchases of Green Energy Per Green Pricing Customer (kWh/year)

	2001	2002	2003	2004	2005
Residential Customers	2,400	2,900	3,400	4,000	4,200
Nonresidential Customers	69,200	60,000	63,100	67,200	74,500
All Customers	3,400	3,900	4,800	5,500	6,200

¹⁰ Note that estimates of average purchases have been revised for years 2002 to 2004 for those reported in Bird and Brown (2004), which were averaged across utility programs. Estimates presented here are calculated based on total sales and customer participants.

Table 12 presents the summary statistics for the kilowatt-hour sales of renewable energy through utility programs in regulated and competitive markets. In 2005, 25% of programs sold more than 26 million kWh of green power annually, while half sold more than 4 million kWh. The increase in the average, and the decrease in the quartile values between 2004 and 2005, indicate an increasing number of smaller programs responding.

Table 12: Renewable Energy Sales through Utility Programs (million kWh)

	2004	2005
25 th percentile	0.8	0.7
50 th percentile	5.5	4.4
75 th percentile	21.5	26.1
Average	25.0	29.1
Total Respondents	74	94

Renewable Energy Resources Supplying Green Pricing Programs

Most programs use new renewable energy sources to supply their green pricing programs, with 87% of sales supplied from new renewable energy facilities.¹¹ Of total sales, wind resources supplied 76%, followed by biomass including landfill gas (17%), hydro (4%), geothermal (3%), and solar (0.2%) (**Table 13**). Despite the relative contribution to total sales, wind, solar, and landfill gas are the renewable resources most commonly used to supply green pricing programs. For example, many utilities offer products that include some solar, but the contribution of solar to the total green power program resource mix on a generation basis is generally small.

Renewable energy sold through green pricing programs in 2005 represents an equivalent renewable energy capacity of nearly 800 MW, with more than 740 MW of this represented by new renewable energy resources.¹² Wind energy represents nearly 90% of the total capacity supplying green pricing programs.

Table 13: Renewable Energy Sources Supplying Green Pricing Programs, 2005

	Landfill Gas	Digesters	Wood	Geother -mal	Hydro	Solar	Wind	Total
Sales MWh	323,000	28,000	63,000	72,000	97,000	6,000	1,859,000	2,448,000
% of Total Sales	13.2%	1.2%	2.6%	2.9%	3.9%	0.2%	76.0%	100%
% New	59%	100%	88%	4%	12%	100%	99%	87.3%
Capacity Factor	90%	90%	80%	90%	50%	20%	30%	n/a
Total MW	41.0	3.6	9.0	9.1	22.0	3.4	707.4	795.5
MW New RE	24.1	3.6	7.9	0.3	2.6	3.4	701.7	743.7

¹¹ New is defined as renewable resources placed in service or repowered after January 1, 1997, consistent with the definition used by the Green-e certification program http://www.green-e.org/what_is/standard/standard.html and other programs such as the Environmental Protection Agency's Green Power Partnership.

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

In previous years, capacity estimates were based on renewable energy projects used to serve green pricing programs, rather than derived from renewable energy sales.¹³ Therefore, the 2005 estimated capacity is not directly comparable to capacity estimates from previous years (see **Table 14**). However, the two approaches yield relatively consistent results.

Table 14: Estimated Cumulative Capacity Supplying Utility Green Pricing Programs, 1999-2004

	1999	2000	2001	2002	2003	2004
Cumulative MW	68	77	221	279	510	706
Annual Growth %	--	14%	188%	26%	82%	38%

While many programs use blends of renewable energy sources, nearly half of all programs feature only one energy source. Of those that feature one resource, most feature wind, while a handful feature solar or biomass. The remaining programs offer a blend of two or more resources.

Green Energy Sales vs. Total Utility Sales

Green energy sales still represent a small but increasing proportion of a utility company's overall energy sales. **Table 15** shows that, on average, sales through green pricing programs represented about 0.5% of total utility electricity sales in 2005, with about 0.9% of residential electricity sales and 0.2% of nonresidential electricity sales in the same year. These fractions have increased steadily during the past few years (**Table 16**). Half of programs reported green power sales of 0.2% of total electricity sales or more. The most successful utility programs reported green energy sales of about 4% of total retail electricity sales.

Table 15: Green Energy Sales as a Percent of Utility Electricity Sales, 2005

Customer Class	Average	25 th Percentile	Median (50 th Percentile)	75 th Percentile	Range
Residential	0.89%	0.08%	0.34%	0.84%	0%-13.7%
Nonresidential	0.23%	0.00%	0.04%	0.20%	0%-4.8%
All customers	0.48%	0.06%	0.2%	0.49%	0%-4.0%

¹³ For details on the derivation of these estimates, see Bird and Swezey 2005b.

Table 16: Average, Median, and Range Green Energy Sales as a Percent of Utility Electricity Sales

Customer Class	2003			2004			2005		
	Avg.	Med.	Range	Avg.	Med.	Range	Avg.	Med.	Range
Residential	0.30%	0.02%	0.0%-3.6%	0.70%	0.40%	0%-10.2%	0.89%	0.34%	0%-13.7%
Nonresidential	0.10%	0.00%	0.0%-2.9%	0.20%	0.02%	0%-3.7%	0.23%	0.04%	0%-4.8%
All customers	0.20%	0.04%	0.0%-3.2%	0.40%	0.20%	0%-3.2%	0.48%	0.2%	0%-4.0%

On average, residential customers spent about \$4.50 per month to purchase or support green power through utility programs in 2005, the lowest recorded average expenditures (**Table 17**). This decline in expenditures is primarily due to a number of programs that reduced the price of renewable energy for customer participants. In fact, this decrease in average monthly expenditure coincides with an increase in average residential purchase quantities.

Utility green pricing programs collected an estimated \$25 million in green power revenues in 2005 (**Table 17**). Although total renewable energy sales grew in 2005, revenues declined because a number of programs lowered the premiums charged for their green power products. Green pricing program revenues are typically used to pay the above-market costs of renewables, as well as the costs of administering and marketing the program—although the treatment of the latter differs by utility (see discussion in the Marketing section of Holt and Holt 2004, Swezey and Bird 2001).

Table 17: Residential Monthly Expenditures on Green Power and Annual Program Revenues

	2002	2003	2004	2005
Average monthly residential expenditures	\$4.80	\$5.50	\$5.30	\$4.49
Annual utility revenues from green power	\$15 million	\$20 million	\$32 million	\$25 million

Ownership vs. Purchases of Supplies

About 25% of utilities supply their green pricing programs entirely from their own renewable energy generation facilities, compared to 21% in 2004 and 31% in 2003 (**Table 18**). Another 59% of utilities either purchase all of their power from an independent power generator or purchase renewable energy certificates (RECs) from a marketer or supplier. The remaining utilities use a combination of these approaches to supply their green power programs. Generally, the data show a movement away from project ownership and an increased reliance on REC purchases. Between 2003 and 2005, the fraction of utilities that purchased RECs for all of their green pricing program supplies increased from 18% to 32%. In addition, the fraction of utilities that owned their own generation for any portion of program supplies dropped.

Also, about 9% of utilities reported using customer-owned renewable energy sources, such as customer-sited solar systems, to supply a portion of their green power program. This question was only asked in 2005.

Table 18: Utility Procurement of Renewable Energy Supplies

Fraction of Supplies	Utilities that Own Generation			Utilities that Purchase Power			Utilities that Purchase RECs		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
For 100% of program power supplies	31%	21%	25%	32%	32%	27%	18%	30%	32%
For at least 50% of program power supplies	39%	25%	32%	42%	40%	42%	20%	33%	35%
For any fraction of program power supplies	49%	33%	43%	47%	48%	47%	24%	36%	35%

Note: Percentages based on 74 responding programs in 2003, 84 programs in 2004, and 80 programs in 2005.

Collectively, utilities purchased more than 1 billion kWh of RECs to serve green power customers in 2005, which represents 42% of all green power sold through utility green pricing programs (**Table 19**). RECs purchases grew by 46% in 2005, down from 69% in 2004, and 300% in 2003.

Table 19: REC Purchases by Utilities to Supply Green Pricing Programs

	2002	2003	2004	2005
REC purchases by utilities for green pricing programs (million kWh)	103	419	707	1,030
REC purchases as percent of total green pricing sales	11%	33%	38%	42%

Data from 2005 also suggest that RECs are being used in wider geographic regions. In 2003, about three-quarters of utilities that supplied their programs with RECs were in the Pacific Northwest; in 2005, about half of the utilities using RECs were in the Pacific Northwest. Utilities that reported purchasing RECs for some portion of their program supplies in 2005 covered 10 states, including California, Colorado, Florida, Idaho, Montana, New Mexico, Oregon, Utah, Vermont, and Washington.

Product Type

Most utility green pricing programs are structured so that customers can purchase renewable energy to meet some or all of their electricity needs. The green power premium charged in these “energy-based” programs is typically expressed in ¢/kWh or \$/kWh block. Other programs are structured to allow customers to contribute funds that support the development of renewable

energy sources. These so-called “contribution programs” have become less common, and currently represent less than 10% of all programs. Finally, a few utilities have offered programs through which customers make a monthly payment tied to the amount of renewable energy capacity that is supported (“capacity-based programs”). For example, customers might be offered the option to pay \$6 each month to support 100 watts of solar energy-generating capacity. Capacity-based programs are no longer actively marketed and, in some cases, have been phased out in favor of energy-based or contribution programs.

Energy Blocks vs. Percentage of Use

About two-thirds of energy-based programs are structured so that customers can purchase blocks of green power. Block sizes range from 15 kWh (for energy derived exclusively from solar systems) to 1,000 kWh (for wind energy or renewable energy blends). The most common block size offered to residential customers is 100 kWh. Many utilities offer larger block sizes to nonresidential customers, and some offer customers the option of purchasing green power for all of their electricity use.

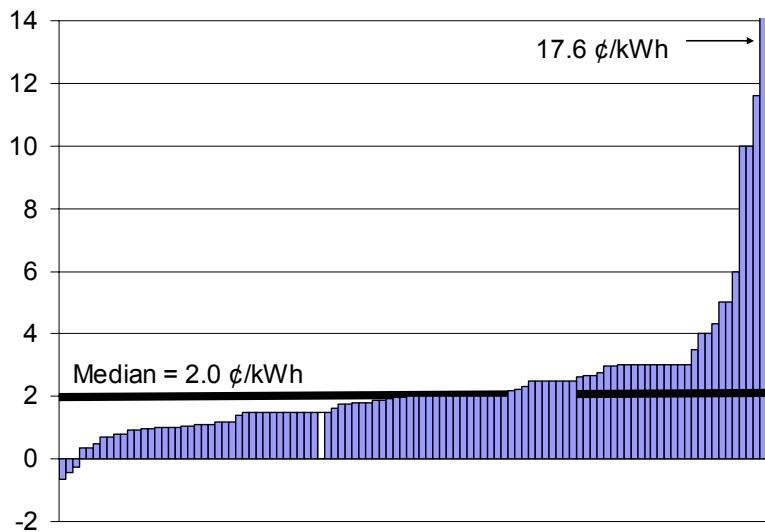
The remaining programs allow customers to purchase green power for some fraction of their electricity needs. Most of these programs allow residential customers to elect to have 25%, 50%, or 100% of their electricity supplied from renewable sources, while a few offer fractions as small as 10%. Often, commercial and industrial customers can purchase green power for a smaller fraction of their electricity use.

Regarding the question of whether it is better to offer a percent-of-use option or kWh-blocks, some marketers have argued that it is difficult to communicate the concept of a kWh-block to consumers, because customers do not understand kWh and are not used to thinking about them. Some marketers have found that this is a significant barrier to enrolling customers. They argue that consumers can more easily understand a product that is presented as a percentage of electricity use. On the other hand, selling blocks of renewable energy may provide additional flexibility to consumers to enable them to purchase smaller increments (although this could also be accomplished by offering a small percent-of-use option). Another potential benefit for customers of purchasing blocks is that the green power premium remains fixed for the customer each month and does not vary along with electricity consumption.

A statistical analysis of green pricing data found that utilities that offer larger blocks (at least 200 kWh) or higher percentages (at least 25%) tend to have greater sales to residential customers, with no obvious impact on the overall level of customer participation (Wiser et al. 2004). In other words, customers may be willing to purchase higher quantities of renewable energy, if that is what is required to participate in the program. However, this effect may not hold for very high purchase thresholds.

Pricing

In 2005, price premiums for energy-based programs ranged from -0.67¢/kWh to 17.6¢/kWh, with an average premium of 2.36¢/kWh and a median of 2¢/kWh. **Figure 1** displays price



**Figure 1: Utility Green Pricing Program Premiums
(Energy-Based Programs Only)**

premiums for individual utility programs—solar-based products dominate the high end of the price range. In 2005, the utility programs with the lowest premiums for energy derived from new renewable sources had premiums ranging from -0.67¢/kWh to 0.91¢/kWh.

In 2005, price premiums continued to decline, decreasing about 4% from 2004. Since 2000, the average price premium has dropped at an average annual rate of about 7.5%. The median premium remained at 2.0¢/kWh between 2004 and 2005 (**Table 20**).

**Table 20: Price Premiums of Utility Green Power Products
(¢/kWh)**

	1999	2000	2001	2002	2003	2004	2005
Average Premium	2.15	3.48	2.93	2.82	2.62	2.45	2.36
Median Premium	2.00	2.50	2.50	2.50	2.00	2.00	2.00
Range of Premiums	0.4-5.0	(0.5)-20.0	0.9-17.6	0.7-17.6	0.6-17.6	0.33-17.6	(0.67)-17.6
10 Programs with Lowest Premiums*	0.4-2.5**	(0.5)-2.5	1.0-1.5	0.7-1.5	0.6-1.3	0.33-1.0	(0.67)-0.91
Number of Programs Represented	24	50	60	80	91	101	104

*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.

**Data for April 2000.

During 2005, 10 programs modified the price premium charged for green power, with most resulting in a premium decrease. Programs with fuel adjustment exemptions had changes in premium paid, and several programs made minor adjustments to the structure of their premiums that had little impact on the size of the premium paid.

For those utilities that reduced their premiums, most attributed the reduction to the exemption of green power customers from fossil fuel charges or their ability to renegotiate power purchase contracts at lower rates. Other reasons that have contributed to the decline in premiums over time are the availability of state or federal financial incentives, higher than expected capacity factors, and natural gas price increases, which have reduced the cost spread between renewable energy and gas-fired generation.

Table 21 presents green pricing premiums by utility type for the past several years, while additional data on premiums in 2005 are shown in **Table 22**. IOUs have the highest average price premium at 3.09¢/kWh, while cooperatives and public utilities have lower average premiums at 1.90¢/kWh and 2.20¢/kWh, respectively. Some of the differences among utility types may result from a greater tendency of IOUs to include program administration and marketing costs in the premium, or to seek recovery of program costs over a shorter period of time. The higher average premium calculated for investor-owned utilities may also stem from the fact that several IOUs offer solar-based programs with relatively high premiums, on the order of 10¢/kWh or higher.

**Table 21: Green Pricing Premiums by Utility Type, 2003-2005
(¢/kWh)**

Type of Utility	2003			2004			2005		
	Avg.	Med.	Range	Avg.	Med.	Range	Avg.	Med	Range
Investor-owned	3.36	2.04	0.6-17.6	3.14	2.00	0.3-17.6	3.09	1.92	(0.67)-17.6
Public	2.30	2.00	0.6-11.6	2.24	2.00	0.5-11.6	2.20	2.00	(0.45)-11.60
Co-op	2.34	2.50	0.9-3.5	2.00	1.85	0.5-3.5	1.90	1.90	0.50-3.50
All Utilities	2.62	2.00	0.6-17.6	2.45	2.00	0.3-17.6	2.36	2.00	(0.67)-17.6

**Table 22: Green Pricing Premiums by Utility Type, 2005
(¢/kWh)**

Type of Utility	Average	25th Percentile	Median	75th Percentile	Range
Investor-owned	3.09	0.98	1.92	3.21	(0.67)-17.6
Public	2.20	1.50	2.00	2.74	(0.45)-11.60
Co-op	1.90	1.50	1.90	2.50	0.50-3.50
All Utilities	2.36	1.40	2.00	2.65	(0.67)-17.6

About 10 programs offer lower green energy premiums to nonresidential customers, offering bulk purchase discounts for large green power purchasers.¹⁴ In these programs, the premium charged to nonresidential customers is generally about 0.5¢/kWh to 2¢/kWh less than the residential green energy premium.

Because most renewable energy facilities do not rely on fuel, some utilities offer fixed-price green power products or exempt their green power customers from some fuel-cost charges. A number of utilities include this feature as a component of their green pricing product.¹⁵ One of these utilities also exempts green power customers from the costs associated with making environmental improvements at some of its fossil fuel-generating facilities. Exempting customers from fossil fuel costs can be a particularly important strategy for enrolling large nonresidential customers with larger energy needs, as evidenced by the success of Austin Energy, which accounts for nearly 16% of all utility green pricing sales nationwide.

Marketing

Marketing and Administration Spending

As one might expect, spending on marketing and administration for green power programs generally varies with size of the utility; however, some large utilities spend relatively little on marketing. In 2005, about three-quarters of the utilities serving fewer than 100,000 customers spent less than \$10,000 annually on marketing (excluding staff time), with the remaining utilities potentially spending as much as \$50,000. Of midsized utilities ranging from 100,000 to 499,999 customers, the majority spent \$10,000 to \$50,000, with just two utilities spending more than \$250,000, and about one-third spending less than \$10,000. Of the large utilities with more than 500,000 customers, there was a wider range of marketing expenditures reported. One-third of large utilities spent less than \$50,000 on marketing, while about half spent more than \$100,000. The top performers¹⁶ represent a higher percentage of the higher marketing expenditures (**Table 23**).

With respect to program-administration spending, the data reflect the same general trends as with marketing expenditures (**Table 24**). Of the small utilities serving fewer than 100,000 customers, about 90% spent less than \$10,000 on administration (including staff time), with the remainder spending up to \$100,000. Of the midsized utilities ranging from 100,000 to 499,999 customers, most spent \$10,000 to \$50,000 on program administration, with about 10% spending more than \$100,000. The largest utilities serving more than 500,000 customers reported a wide range of expenditures on administration, similar to the marketing data. More than half of the large utilities spent more than \$100,000 on administration, while about a third spent less than \$50,000.

¹⁴ The utilities include: Continental Cooperative Services/Soyland, Midstate Electric Cooperative, North Carolina utilities participating in NC Green Power Program, PacifiCorp, Portland General Electric, Puget Sound Energy, Salt River Project, We Energies, and Wisconsin Public Power Inc.

¹⁵ The utilities 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.

¹⁶ The top performers are defined as those that were among the top 10 programs for customer participants, green power sales, and customer participation rate, according to the NREL rankings (see Appendix C).

Table 23: Utility Expenditures on Marketing in 2005 (Excluding Staff Time)

Number of Utility Customers	Number of Responses					Total Responses
	Less than \$10,000	\$10,000-\$50,000	\$50,000-\$100,000	\$100,000-\$250,000	\$250,000-\$500,000	
1-99,999	35	6	0	0	0	41
100,000-499,999	7	13	0	0	2	22
500,000-999,999	2	1	2	2	2	9
1,000,000+	2	1	0	4	2	9
Total Respondents	46	21	2	6	6	81
Top Performers/ % All Respondents	2/4%	3/14%	1/50%	4/67%	3/50%	13/16%

Table 24: Utility Expenditures on Program Administration in 2005 (Including Staff Time)

Number of Utility Customers	Number of Responses						Total
	Less than \$10,000	\$10,000-\$49,999	\$50,000-\$99,999	\$100,000-\$249,000	\$250,000-\$499,999	\$500,000 – \$750,000	
1-99,999	36	4	1	0	0	0	41
100,000-499,999	3	10	4	2	0	0	19
500,000-999,999	3	2	2	1	0	1	9
1,000,000+	2	1	1	5	1	0	10
Total Respondents	44	17	8	8	1	1	79
Top Performers/ % Total Respondents	3/7%	3/18%	1/13%	5/63%	0/0%	1/100%	13/16%

In 2005, utilities reported that a median of 2% (average of 15%) of the total green power premium was spent on marketing and program administration (**Table 25**),¹⁷ while the top-performing programs reported spending a median of 23% and an average of 29%. A number of utilities, primarily public utilities and cooperatives, reported that no portion of the premium was used for marketing and administration. For some utilities, this is because they use overall utility marketing dollars to advertise the program and do not include these costs in the program premium, whereas others are not actively promoting their programs. The decline in the fraction of the premium attributed to marketing costs may reflect a slowdown in marketing activities by some utilities.

¹⁷ In 2002, utilities reported spending a median of 15% (average of 20%) of their program budgets on marketing. It is not possible to compare responses for 2002 and 2003/2004, because the questions differed.

Table 25: Marketing and Administrative Expenditures as Percentage of Premium, 2005

	2003	2004	2005
Average	17%	20%	15%
Median	5%	9%	2%
No. of Responses	36	60	59

Thirty-eight programs (54%) indicated that program participants cover all costs associated with the green pricing program. Of the remaining 32 programs in which nonparticipants cover some costs, most program managers explained that some marketing and administrative costs were not attributed to the program (i.e., spread among all ratepayers). The other most commonly cited reasons were that the green pricing program received grants or other contributions, and that the utility spread the cost of unsold renewable energy among all ratepayers (**Table 26**). Results were similar in 2003 and 2004.

Table 26: Explanation of Costs Born by Nonparticipants, 2005

	Number of Responses
Some marketing and administrative costs shared by all ratepayers (or not attributed to the green pricing program)	23
The program receives grants, public goods funds, subsidies, or other contributions	3
The utility spreads the cost of unsold renewable energy among all ratepayers	1
70 programs responded, and 33 programs provided explanations; not all explanations are accounted for in this table.	

Customer Acquisition

One measure of the cost of marketing a green pricing program is customer-acquisition cost—the marketing expenditures divided by the number of new customers that enroll in the program. For 2005, utilities providing data reported median and average residential customer-acquisition costs for green pricing programs of \$25 and \$43, respectively (**Table 27**).¹⁸ However, the responses varied widely, ranging from \$0 to more than \$300 (**Figure 2**). The top-performing programs reported median and average residential customer-acquisition costs of \$27 and \$31, respectively.

¹⁸ Only about half of the utilities provided this information. The relative lack of responses may be resultant of some utilities not tracking customer-acquisition costs.

Table 27: Residential Customer-Acquisition Costs by Year

	2002	2003	2004	2005	2004 Top Performers	2005 Top Performers
Average	\$44	\$36	\$42	\$43	\$48	\$31
Median	\$30	\$31	\$30	\$25	\$40	\$27
No. of Respondents	25	22	43	45	18	10

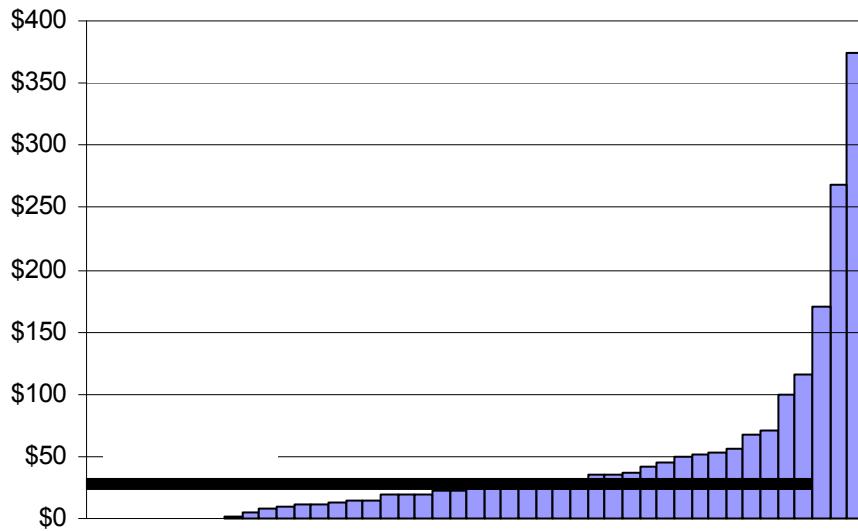


Figure 2: Customer-Acquisition Costs, 2005

Table 28: Residential Customer-Acquisition Costs by Utility Size

Size of Utility	2003			2004			2005		
	Avg.	Median	No. Resp.	Avg.	Median	Num. Resp.	Avg.	Median	No. Resp.
1-99,999 Customers	\$10	\$5	7	\$12	\$4	12	\$27	\$14	21
100,000-499,999 Customers	\$46	\$40	7	\$56	\$35	13	\$97	\$41	9
500,000-999,999 Customers	\$44	\$38	4	\$60	\$55	9	\$40	\$28	7
1,000,000 Customers	\$57	\$46	4	\$41	\$36	9	\$29	\$30	8
All Utilities	\$36	\$31	22	\$42	\$30	43	\$43	\$25	45

Customer-acquisition costs differed considerably depending on the size of the utility (**Table 28**), with utilities serving more than 100,000 customers reporting higher customer-acquisition costs than smaller utilities. Some of the variability may be due to the types of costs that the utilities

included in the calculation. For example, some utilities do not attribute all of the costs of marketing and administration to the program, which would lead to lower per-customer costs. Also, large utilities may have the resources to track expenditures more closely. And small utilities tend to rely on bill inserts and are less creative in targeted marketing.

Marketing Techniques Employed

The 2005 questionnaire asked respondents to indicate the various marketing techniques applied to their green pricing programs (**Table 29**). As in previous years, advertising programs through utility newsletters, bill inserts, events, news articles (publicity), and Web marketing were among the top marketing strategies used.^{19, 20} A smaller fraction of utilities reported using television and partnering with environmental organizations.

In 2004 and 2005, utilities were also asked to rank the effectiveness of the various marketing techniques listed in the questionnaire. Marketing techniques that received average rankings above 3 out of a possible 5 included: bangtails, community challenges, bill inserts, door-to-door marketing, direct sales (to commercial accounts), direct mail, and publicity. Interestingly, the techniques with the highest effectiveness ranking were not necessarily the most commonly used. In 2005, programs employed an average of five of the marketing strategies listed in the questionnaire, while the top performers reported an average of eight. About a third of utilities reported using three or fewer marketing techniques (**Table 30**).

¹⁹ In 2003, the “events” category was not listed as a specific option in the survey, but was listed under the “other” category by some respondents. The 2002 and 2004 surveys both included “events” as a category, and can therefore be compared with each other.

²⁰ Lieberman (2002) reviewed marketing data for public utilities with similar findings, except that direct mail was ranked higher.

Table 29: Marketing Techniques Used by Utilities

	Percent of Utilities Using Technique				Percent Top Performers Using Technique**			Average Usefulness Rank^			
	2002	2003	2004	2005	2003	2004	2005	2004		2005	
								All	Top	All	Top
Utility newsletter	70%	81%	78%	74%	87%	73%	81%	2.9	2.9	2.9	2.8
Bill inserts	61%	83%	74%	66%	87%	73%	75%	3.2	3.4	3.5	3.7
Events	80%	24%*	74%	60%	40%	73%	81%	2.6	2.7	2.5	2.5
Publicity	63%	64%	56%	57%	67%	69%	63%	3.4	3.1	3.1	3.1
Web marketing^	n/a	n/a	56%	54%	n/a	73%	63%	3.3	3.4	2.7	3.2
Newspaper ads	43%	53%	36%	42%	60%	46%	50%	2.5	2.1	2.2	2.4
Direct sales^	n/a	n/a	38%	36%	n/a	50%	63%	3.5	3.8	3.4	3.5
Direct mail	55%	48%	35%	34%	67%	62%	63%	3.7	3.7	3.2	3.7
Radio ads	37%	45%	22%	27%	53%	19%	25%	2.5	1.2	2.4	2.3
Bangtails	n/a	n/a	n/a	16%	n/a	n/a	38%	n/a	n/a	3.9	4.5
Partner with environmental groups^^	n/a	n/a	26%	16%	n/a	54%	38%	2.7	2.8	2.9	2.7
Retail partners^	n/a	n/a	11%	13%	n/a	23%	31%	2.9	3.0	2.5	2.2
Television ads	20%	22%	15%	10%	13%	31%	31%	2.3	1.8	1.5	1.8
Billboards	7%	7%	8%	7%	7%	12%	13%	3.2	2.0	1.7	1.5
Community challenges^	n/a	n/a	7%	5%	n/a	19%	13%	2.5	2.4	3.8	3.5
Kiosks^	n/a	n/a	7%	5%	n/a	4%	0	3.2	2.0	1.1	0
Other	32%	41%	19%	5%	60%	46%	6%	3.9	4.1	1.8	2.7
Telemarketing	8%	14%	6%	4%	20%	12%	19%	3.2	4.3	2.8	3.7
Door -to-door^}}	n/a	n/a	n/a	2%	n/a	n/a	6%	n/a	n/a	3.3	5

*Note: "Events" was listed as a specific option in the 2002, 2004, 2005 questionnaire; while, in 2003, respondents were able to write it in under "Other."

**Top performers are defined as utilities that make the Top 10 lists for participants, sales, or participation rate. In 2004 and 2005, 26 and 16 top programs responded to this question, respectively.

^ Ranking system is 1-5 with 5 being the most useful marketing technique. Ranking system only included in 2004.

^}New category in 2004

^}}New category in 2005

60 programs provided responses to the question in 2002, 58 responded in 2003, 88 in 2004, and 91 in 2005.

Compared to all programs, the top performers more commonly used many of the techniques listed, including direct mail, direct sales, partnerships with environmental organizations, bangtails, television ads, retail partnerships, and telemarketing. One potential reason for differences in marketing strategies used by top performers may be related to the marketing budgets. The top performers represent a significant majority of the programs that spend the most on marketing (see **Table 23**).

Table 30: Number of Marketing Techniques Used by Utilities

Number of Techniques Used by Utilities	2003	2004	2005
0-1	7%	6%	13%
2-3	26%	20%	20%
4-6	45%	34%	33%
7-9	21%	22%	22%
10-13	n/a	18%	12%

Note: There were 58 responses to this question in 2003, 88 in 2004, and 91 in 2005. Percentages may not add to 100% due to rounding.

Program Implementation

Enrollment Options

Utilities reported that the most common methods for enrolling customers in green pricing programs included using the utility's Web site, phoning through the utility's call center, returning mail-in cards, and signing up during special events (**Table 31**). Web site enrollment options have become more common since 2002, perhaps because utilities have improved their Web sites or increased their Web presence.

Table 31: Methods of Enrolling in Green Pricing Programs

	% Using Method				2005 Top Performers % Using Method	Average Rank 1 to 5, 5=highest
	2002	2003	2004	2005		
Utility Web site	74%	83%	80%	85%	94%	2.5
Phone (utility call center)	92%	87%	84%	84%	94%	2.8
Returning mail-in card	90%	85%	83%	81%	100%	3.9
Enroll at special events	90%	85%	73%	75%	75%	2.1
Other	23%	31%	48%	24%	38%	3.3
Check-box on utility bill	8%	12%	15%	13%	13%	3.1

Note: The number of respondents was 62 in 2002, 59 in 2003, 88 in 2004, and 91 in 2005. Sixteen top performers responded to this question.

Only about 13% of utilities allowed customers to enroll by checking a box on their utility bills, but those that did ranked it high in effectiveness. Other methods that were ranked as relatively effective, with scores greater than 3 out of 5, included “other” methods (which respondents were asked to list) and mail-in cards. Some of the enrollment options listed under “other” included bill inserts, direct sales through account representatives (both residential and commercial), phone marketing by a contractor, and enrolling customers through retail partners or at the utility itself. On average, utilities offered three of the six enrollment options listed in the questionnaire. The top-performing programs were more likely to use most of the techniques listed.

Enrollment Term

Roughly one-quarter to one-third of utilities require residential and nonresidential customers to subscribe to green pricing programs for a minimum period of time (**Table 32**). One year is the most common minimum enrollment period, with requirements ranging from 2 months to 10 years. In some cases, utilities require nonresidential customers to enroll for longer periods of time than residential customers. Only four residential and six nonresidential programs had enrollment terms of more than one year in length.

Table 32: Enrollment Term by Customer Segment

	Residential	Nonresidential
Percent of utilities with a minimum enrollment term*	26%	32%
Most common enrollment term	1 year	1 year
Range of enrollment requirements	2 months to 10 years	2 months to 10 years
*81 residential and 77 nonresidential programs responded to this question.		

Program Evaluations and Market Research

Fifty-three utilities (58%) reported that they had conducted customer research to aid the design of their green pricing program or to develop a marketing plan. Of the 53 utilities, eight did so in 2005 and 27 did so in multiple years including 2005. The types of research ranged from consumer surveys conducted by phone, mail, in person (focus groups), or the Web (25 utilities reported); customer profiling and demographics (3); research to test the effectiveness of marketing messages or strategies (3); and research to determine customer satisfaction (1). Of the responding top-performing programs (16), 100% reported conducting market research.

In terms of program evaluation, 29 respondents (32%) indicated that they had performed a program evaluation in 2005 or earlier. Fourteen of the programs reported evaluating their programs continually, annually, or biannually. Utilities listed that they evaluated factors such as:

messaging, market channel effectiveness, advertising effectiveness, campaign effectiveness, and acquisition costs, as well as program participation or success in meeting program goals. Of the top-performing programs, 59% reported conducting one or more program evaluation, compared to 32% of all programs.

Customer Value

Response to utility green pricing programs can be influenced by additional values offered to both residential and nonresidential customers (Wiser et al. 2004). For example, customers may be more willing to participate in a program if their participation is recognized or rewarded, or if they receive other products and services, such as compact fluorescent lightbulbs or store discounts.

Table 33 indicates the percentage of utilities that provide additional benefits to customers, based on a list of options included in the 2002-2005 questionnaires. Of the 11 options listed, respondents indicated that their utilities offered an average of three additional benefits to their green pricing customers. As in previous years, the most common added benefits in 2005 were 1) to inform customers about the status of the program through newsletters that provide periodic program updates, 2) to provide decals that can be displayed in windows, 3) to recognize participants with plaques or other items, and 4) to recognize business customers through ads in local media. The fraction of utilities offering 1) tours to renewable energy facilities and 2) installing renewable energy systems on schools or offering renewable energy education programs have trended downward during the past recorded years. A relatively small fraction of utilities offer compact fluorescent lightbulbs or energy efficiency products, discounts or promotions at local businesses, protection from fuel cost increases, or exemption from environmental fees (e.g., fees designated for installing emission-control equipment at fossil fuel plants).

As in previous years, the top-performing programs were more likely to offer many of the benefits listed in **Table 33**. For example, 69% of the top performers recognized business participants through ads in local media or with plaques or other items, compared to about 46% of all programs. The top performers were also more likely to provide decals for display in store windows, discounts, or promotions at local businesses; to protect customers from fuel cost increases; and provide energy efficiency products. Overall, top performers reported providing an average of six of the benefits listed, compared to an average of three for all programs.

Table 33: Methods of Providing Additional Program Benefits

	% Using Method				Top Performers 2005, % Using Method*
	2002	2003	2004	2005	
Newsletters that provide program updates	62%	64%	61%	62%	88%
Decals for display in store windows	59%	56%	49%	54%	81%
Recognition of business customers in program ads or local media	44%	51%	49%	46%	69%
Plaques or other items for recognition	40%	49%	51%	44%	63%
Installations on schools/renewable energy education programs	30%	25%	19%	30%	38%
Tours to renewable energy project sites	35%	29%	23%	25%	31%
Other	5%	12%	16%	16%	6%
Compact fluorescents or efficiency products	22%	12%	15%	15%	25%
Discounts or promotions at local businesses	8%	12%	12%	15%	44%
Protection from fuel-cost increases	11%	10%	9%	15%	44%
Exemption from environmental fees	2%	2%	1%	2%	12%

Note: 63 programs answered this question in 2002, 59 programs in 2003, 89 programs in 2004, and 91 in 2005.
 *Top performers are defined as utilities ranked among the top 10 for participants, sales, or participation rate. Of the top performers in 2005, 16 responded to this question.

Conclusions and Observations

At the end of 2005, more than 600 utilities—including many small municipal and cooperative utilities—offered green pricing programs to more than 50 million customers nationally. About 20% of all utilities nationwide now offer a green pricing option.

Collectively, utilities sold nearly 3 billion kilowatt-hours (kWh) of green power to more than 450,000 customers in 2005. In traditionally regulated electricity markets, sales of renewable energy through utility green pricing programs grew by 33% to about 2.5 billion kWh in 2005, following annual growth in excess of 40% in 2003 and 2004. The increase resulted from both an increase in customer participants as well as larger purchases by nonresidential customers. However, green pricing sales still represent a very small fraction of total utility electricity sales, with an average below 1%—although some utilities have achieved sales penetration rates of as much as 4%.

For utility/marketer programs offered in restructured electricity markets, the number of customers and renewable energy sales more than doubled during 2005. These high growth rates may be explained, in part, by the relative infancy of most competitive market programs and the fact that these programs are implemented in conjunction with companies that specialize in renewable energy marketing, which have a vested financial interest in program success.

The number of customers participating in utility green pricing programs increased by about 20% in 2005, a slower pace than sales. The number of nonresidential participants increased at nearly twice the rate of residential customers, in contrast to 2004 when growth rates were similar. Programs that offer fuel price-protection benefits or those that offer volume discounts or lower premiums for large nonresidential purchasers contributed significantly to growth in nonresidential participants during 2005, suggesting that these are important program benefits for nonresidential consumers.

Customer attrition rates fell to a median of 5% in 2005, reversing a recent trend of increasing dropout rates. This finding is somewhat surprising in a year in which customers throughout the country faced higher electricity and energy prices. Although the reason for the overall improvement in customer retention is not clear, it suggests that green power customers are “sticky” and tend to maintain participation in green power programs, despite cost increases.

As in previous years, a relatively small number of utility green power programs continue to dominate sales and participation figures. The top 10 programs accounted for about 70% of green energy sales and 65% of customer participants, consistent with figures from 2004. As in the past, one utility program (Austin Energy) accounted for nearly 20% of all green pricing sales. This utility offers a fixed-price product that protects participating customers from nonrenewable fuel-cost increases for up to 10 years. This value-added strategy has proven to be extremely popular among nonresidential customers.

Average participation rates in green pricing programs have remained relatively flat over time, climbing slightly to 1.5% in 2005. Participation rates among the 10 most successful programs have been substantially higher, ranging from between about 5% and 14% in 2005 with most

clustered from 5% to 6%. This suggests that high participation rates are possible with dedicated marketing and outreach campaigns, or in programs that offer superior value propositions. However, these rates still remain well below the 50% to 70% of customers who indicate they are willing to pay a premium for green power in market research surveys (Farhar 1999).

The price premiums charged for green power continued on a downward trend. The average premium has fallen from 2.93¢/kWh in 2001 to 2.36¢/kWh in 2005; the median premium remained constant at 2¢/kWh. Several programs that exempt participants from fossil fuel cost changes offered green power at rates below standard electricity prices during 2005. In addition, a number of programs were able to reduce the price premium because of fossil fuel-charge exemptions or by renegotiating power purchase contracts at lower rates. Also, several utilities introduced programs that offer volume discounts or lower premiums for large, nonresidential purchasers.

Utilities reported a median cost of \$25 for acquiring new residential customers, down from the approximately \$30 reported in previous years. Marketing expenditures generally vary with utility size, but there is wide variation in expenditures among the largest utilities. On average, the top-performing programs spend a greater portion of program revenues on marketing and represent most of the top marketing spenders. Thus, the level of marketing expenditures appears to be important to program success.

The top performers generally use a larger number of marketing techniques than other utilities. Compared to all programs, the top performers more commonly used direct mail, direct sales, partnerships with environmental organizations, bangtails, television ads, retail partnerships, and telemarketing. Consistent with findings from previous years, the techniques that received high effectiveness scores are not necessarily the most commonly used. In general, utilities may benefit from diversifying their marketing activities to include some of the more effective strategies.

At the end of 2005, green pricing programs were supporting the equivalent of more than 740 MW of new renewable energy capacity. Thus, green pricing continues to be a viable strategy for supporting new renewable energy sources. Nevertheless, current success can still be attributed to a relatively small number of programs. Continued industry growth will depend largely on the introduction of new programs and whether the success of the top-performing programs can be duplicated by other utilities.

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Appendix A

Utility Green Power Program Questionnaire (2005 Data)

Instructions – Please fill out a different form for each green power program offered. Please enter data for calendar year 2005.

Confidentiality – Individual utility responses to this survey regarding customers, sales, and marketing information will be held confidential. Data are used to prepare NREL's list of top ten utility green power programs and to provide aggregate industry data to the U.S. DOE and the general public.

1. Program and Contact Information

a. Utility Name	
b. Name of Green Power Program	
c. Name of Respondent	
d. Phone and e-mail of Respondent	
e. Year Program Launched	
f. States in which Program is Offered	
g. Name of Third-party Marketer, if any	
h. Certifying Organization, if Certified	

2. Participation. In the table below, please provide participation data as of December 31, 2005. If data are provided for a different time period, please indicate.

a. Total number of residential green power participants	
b. Total number of non-residential green power participants	
c. Number of new residential green power participants in 2005 (do not subtract dropouts)	
d. Number of new non-residential green power participants in 2005 (do not subtract dropouts)	
e. Total number of residential customers (or members) eligible to participate	
f. Total number of non-residential customers (or members) eligible to participate	
g. Is the program currently open to new customers? Yes/No	
h. Number of customers on waiting list	
i. Number of participants who have dropped out of the program this year	
j. Minimum period of time residential customers must participate (e.g., 1 year)	
k. Minimum period of time non-residential customers must participate (e.g., 2 years)	

3. Programs Offered Through Distribution Utilities. For programs that are offered through multiple distribution cooperatives or municipal utilities, please list the number of distribution utilities that offer the program and utilities that have achieved participation rates of 4% or higher. Please add more space, if necessary.

Number of Distribution Utilities That Offer Program	Utilities with >4% Participation	Participation Rate

4. Pricing. Please indicate the price premium as of the end of 2005.

Sector	Price Premium ($\$/kWh$)	Are Participants Exempt from Fuel Charge? Y/N If yes, what was fuel charge in Dec 2005? ($\$/kWh$)	Change in Premium in 2005? Y/N*	Block Size, if applicable (kWh)	Minimum Purchase (e.g. 25% or kWh)
a. Residential					
b. Non-Residential					

*If there was a change in the price premium during 2005 or if you anticipate a price premium change in 2006, please explain.

5. Renewable Energy Sales for 2005. In the table below, please indicate the total annual sales of green power to customers during 2005. If sales are reported for a different period other than January through December 2005, please indicate.

<i>Green power sales for 2005</i>	<i>TOTAL 2005 Sales (kWh)</i>
a. Green power sales to residential customers	
b. Green power sales to non-residential customers	
c. Total retail electricity sales to eligible residential customers	
d. Total retail electricity sales to eligible non-residential customers	

6. Renewable Energy Mandates. Does your utility count the green power sold to customers through your green pricing program toward compliance with a state-imposed renewable portfolio standard? **Yes / No**

7. Sales by Renewable Resource. In the table below, list the percentage of sales supplied by each of the following renewable resources in 2005. Also, please indicate the percentage of sales supplied by new renewable energy sources, if different.

Resource	Percent of Sales Supplied by Resource Type	Percent of Sales Supplied by New* Resources
Biomass: Landfill Gas	%	%
Biomass: Biogas	%	%
Biomass: Wood or Other	%	%
Geothermal	%	%
Hydroelectric	%	%
Solar	%	%
Wind	%	%

**New resources defined as those in service or repowered after January 1, 1997.

8. Renewable Energy Supplies. Of the renewable energy used to supply your program, what percentage came from the following?

Renewable projects owned or partially-owned by your utility	%
Renewable energy purchases from other suppliers/producers	%
Renewable energy produced by utility customers (e.g. PV)	%
Renewable certificate purchases	%
Total	100 %

9. Renewable Energy Projects Supplying Program. In the table below, please indicate the type and amount of renewable resources used to supply participants in your green pricing program during 2005.

Name(s) of Renewable Energy Project Used to Supply Program	Resource Type (e.g., Wind, PV)	Nameplate Capacity Installed (kW)	Year Installed	2005 Energy or REC Purchases (kWh/yr)

10. Planned Renewable Energy Supplies. In the table below, please indicate any planned renewable energy projects that will be used to supply participants in your green pricing program.

Name(s) of Planned Renewable Energy Projects to Supply Program in Future	Resource Type (e.g., Wind, PV)	Nameplate Capacity Planned (kW)	Year Planned

11. Program Research. Have you performed (in 2005 or earlier) market research to aid in the design of your green power program or have you performed a program evaluation?

Research Category	Did you Perform? Y/N	In what year(s) was research performed?	Type of Research or Evaluation Performed
a. Market Research			
b. Program Evaluation			

12. Customer Enrollment. In which ways can customers sign up for your program? (check all that apply) Also, please rate the effectiveness of each method on a scale of 1 to 5, with 5 being the most effective.

	Check (x)	Effectiveness Rating (1-5 scale, 5 =most effective)
Utility Web site		
By returning a mail-in card/bangtail		
Checking a box on their electric bill		
Sign up at special events		
By phone through the utility call center		
Other? (specify)		

13: Value-Added Products. What other value-added products or services do you provide to customers that enroll in your green power program? (check all that apply)

Compact fluorescents or efficiency products		Decals for display in store windows	
Recognition of business customers in program ads or local media		Education programs/school installations	
Discounts or promotions at local businesses		Plaques, certificates or other recognition	
Newsletters that provide program updates		Protection from fuel cost increases	
Tours to renewable energy project sites		Exemption from environmental fees	
Welcome Kit/Thank you letter		Other (List):	

14. Marketing and Administration Spending. Please indicate below how much you spend annually on marketing and administration of your green power program. (check the appropriate boxes below)

	Marketing Costs (excluding staff time)	Administrative Costs (including staff time)
Less than \$10,000		
\$10,000-\$49,999		
\$50,000-\$99,999		
\$100,000-\$249,999		
\$250,000-\$499,999		
\$500,000 -\$749,999		
\$750,000-\$999,999		
\$1,000,000 or more		

15. Distribution of Costs.

What percentage of your green power premium was attributable to marketing and administrative costs in 2005?	%
Are all program costs borne by program participants? Circle one.	Y / N
If no, please explain	
On average, how much did you spend in 2005 to sign up each residential customer (\$/customer)?	\$

16. Marketing Strategies. In the table below, please indicate which marketing strategies you used for your green power program in 2005. (check all that apply) Also, please rate the cost-effectiveness of those strategies utilized based on a scale of 1 to 5, with 5 being the most cost-effective.

	Check (x)	Rating (1-5)		Check (x)	Rating (1-5)
Bill inserts			Publicity/feature stories (non-paid)		
Television			Events/Presenting to groups		
Telemarketing			Community challenges		
Direct mail			Partner with environmental orgs.		
Radio			Retail partners (co-branding)		
Billboards			Web-based marketing		
Utility newsletter			Direct sales to commercial accts.		
Bangtails			Door-to-door residential		
Newspaper/other print ads			Kiosks		
Other (please list):					

Appendix B

Table B-1: Utilities Offering Green Pricing Programs in Regulated Markets, 2005

Investor-Owned Utilities	
Alabama Power Company	Federal
Alliant Energy	Tennessee Valley Authority*
Arizona Public Service	
Avista Utilities	Municipals/Other Public Utilities
Central Vermont Public Service	City of Alameda
Dominion NC Power	AMP Ohio
Duke Power	Anaheim Public Utilities
El Paso Electric	City of Ashland
Florida Power & Light Company	Austin Energy
Green Mountain Power	Benton County PUD
Gulf Power	City of Bowling Green
Hawaiian Electric	Burbank Water and Power
Idaho Power Company	Cedar Falls Utilities
Indianapolis Power & Light Company	Chelan County PUD
Madison Gas & Electric	Clallum County PUD
MidAmerican Energy	Clark Public Utilities
Minnesota Power	Colorado Springs Utilities
Northwestern Energy	Columbia River PUD
OG&E Electric Services	Concord Municipal Light Plant
Otter Tail Power Company	Cowlitz PUD
PacifiCorp*	ElectriCities
Portland General Electric	Emerald People's Utility District
Progress Energy	Eugene Water & Electric Board
PSI Energy/Cinergy	Gainsville Regional Utilities
Public Service of New Mexico	Grant County PUD
Puget Sound Energy	Grays Harbor PUD
Tampa Electric Company	Iowa Association of Municipal Utilities*
Tucson Electric Power Company	Keys Energy Services
UniSource Energy Services	Lansing Board of Water and Light
Upper Peninsula Power Company	Lewis County PUD
We Energies	Lincoln Electric System
Wisconsin Public Service Corporation	Los Alamos Department of Public Utilities
Xcel Energy	Los Angeles Department of Water and Power
	Mason County PUD No. 3
Electric Cooperatives	Missouri River Energy Services*
Basin Electric Power Cooperative*	Moorhead Public Service
Boone Electric Cooperative	Muscatine Power and Water
Continental Cooperative Services/Soyland	City of Naperville
Corn Belt Power Cooperatives	City of New Smyrna Beach
Dairyland Power Cooperative*	Oklahoma Municipal Power Authority
Deseret Power	Omaha Public Power District
East Kentucky Power Cooperative*	Pacific County PUD #2
Farmers Electric Cooperative	Pasadena Water & Power
Georgia Electric Membership Corporation*	City of Palo Alto Utilities
Golden Valley Electric Association	Platte River Power Authority*
Great River Energy*	Roseville Electric
Holy Cross Energy	Sacramento Municipal Utility District
Hoosier Energy*	City of St. Charles
Lower Valley Energy	City of St. George Energy Services Department
Midstate Electric Cooperative	Salt River Project
Minnkota Power Cooperative*	City Public Service of San Antonio
Orcas Power & Light Cooperative	Santee Cooper*
Oregon Trail Electric Cooperative	Seattle City Light
PNGC Power*	Silicon Valley Power
Park Electric Cooperative	Snohomish County PUD
Peninsula Light Company	Southern Minnesota Municipal Power Agency*
Southern Montana Electric G&T Cooperative	City Utilities of Springfield
Tri-State Generation and Transmission Assoc.*	Tacoma Power
Vigilante Electric Cooperative	City of Tallahassee
Wabash Valley Power Association*	Traverse City Light & Power
Western Farmers Electric Cooperative	Waverly Light & Power
Yampa Valley Electric Association	Wisconsin Public Power Inc.*

*denotes program offered through multiple utilities or distribution cooperatives

Table B-2: Utility/Marketer Green Power Programs in Restructured Electricity Markets, 2005

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
PECO Energy
PSE&G
United Illuminating

Appendix C

**Table C-1: Green Pricing Program Renewable Energy Sales
(as of December 2005)**

Rank	Utility	Resources Used	Sales (kWh/year)	Sales (aMW)^a
1	Austin Energy	Wind, landfill gas	435,140,739	49.7
2	Portland General Electric ^b	Existing geothermal and hydro, wind	339,577,170	38.8
3	PacifiCorp ^{cd}	Wind, biomass, solar	234,163,591	26.7
4	Florida Power & Light	Biomass, wind, solar	224,574,530	25.6
5	Sacramento Municipal Utility District ^e	Wind, landfill gas, small hydro, solar	195,081,504	22.3
6	Xcel Energy ^{ef}	Wind	147,674,000	16.9
7	National Grid ^{ghi}	Biomass, wind, small hydro, solar	127,872,457	14.6
8	Basin Electric Power Cooperative	Wind	113,957,000	13.0
9	Puget Sound Energy	Wind, solar, biogas	71,341,000	8.1
10	OG&E Electric Services	Wind	63,591,526	7.3

^a An “average megawatt” (aMW) is a measure of continuous capacity equivalent (i.e., operating at a 100% capacity factor).

^b Some products marketed in partnership with Green Mountain Energy Company.

^c Includes Pacific Power and Utah Power.

^d Some Oregon products marketed in partnership with 3 Phases Energy Services.

^e Product is *Green-e* certified (www.green-e.org). For Xcel Energy, only the Public Service Company of Colorado product is green-e certified.

^f Includes Northern States Power, Public Service Company of Colorado, and Southwestern Public Service.

^g Includes Niagara Mohawk, Massachusetts Electric, Narragansett Electric, and Nantucket Electric.

^h Marketed in partnership with Community Energy, EnviroGen, Green Mountain Energy Company, Mass Energy, People’s Power & Light, and Sterling Planet.

ⁱ Some products are certified by Green-e (www.green-e.org) or Environmental Resources Trust <http://www.ert.net>.

**Table C-2: Total Number of Customer Participants
(as of December 2005)**

Rank	Utility	Program(s)	Participants
1	Xcel Energy ^a	<i>Windsource^b Renewable Energy Trust</i>	49,354
2	PacifiCorp ^{cd}	<i>Blue Sky Block Blue Sky Usage Blue Sky Habitat</i>	42,269
3	Portland General Electric ^c	<i>Clean Wind Green Source Healthy Habitat</i>	40,570
4	Sacramento Municipal Utility District	<i>Greenergy^b</i>	31,229
5	Los Angeles Department of Water & Power	<i>Green Power for a Green LA</i>	24,380
6	Florida Power & Light ^f	<i>Sunshine Energy</i>	23,066
7	PECO ^g	<i>PECO WIND</i>	22,164
8	National Grid ^{hi}	<i>GreenUp^j</i>	20,986
9	Puget Sound Energy	<i>Green Power Program</i>	15,500
10	We Energies	<i>Energy for Tomorrow^b</i>	12,458
10	Alliant Energy ^k	<i>Second Nature^b</i>	12,426

^a Includes Northern States Power, Public Service Company of Colorado, and Southwestern Public Service.

^b Product is *Green-e* certified (www.green-e.org). For Xcel Energy, only the Public Service Company of Colorado product is *Green-e* certified. For Alliant Energy, Iowa and Minnesota products are *Green-e* certified.

^c Includes Pacific Power and Utah Power.

^d Some Oregon products marketed in partnership with 3 Phases Energy Services.

^e Some products marketed in partnership with Green Mountain Energy Company.

^f Marketed in partnership with Green Mountain Energy Company.

^g Marketed in partnership with Community Energy, Inc.

^h Includes Niagara Mohawk, Massachusetts Electric, Narragansett Electric, and Nantucket Electric.

ⁱ Marketed in partnership with Community Energy, EnviroGen, Green Mountain Energy Company, Mass Energy, People's Power & Light, and Sterling Planet.

^j Some products are certified by *Green-e* (www.green-e.org) or Environmental Resources Trust <http://www.ert.net>.

^k Includes Interstate Power and Light and Wisconsin Power and Light.

**Table C-3: Customer Participation Rate
(as of December 2005)**

Rank	Utility	Customer Participation Rate	Program(s)	Program Start Year
1	City of Palo Alto Utilities ^a	13.6%	<i>Palo Alto Green</i> ^b	2003
2	Lenox Municipal Utilities ^c	12.6%	<i>Green City Energy</i>	2003
3	Montezuma Municipal Light & Power ^c	6.3%	<i>Green City Energy</i>	2003
4	Holy Cross Energy	6.0%	<i>Wind Power Pioneer</i> <i>Local Renewable Energy Pool</i>	1998 2002
5	Sacramento Municipal Utility District	5.5%	<i>Greenergy</i> ^b	1997
6	Portland General Electric ^d	5.3%	<i>Clean Wind</i> <i>Green Source</i> <i>Healthy Habitat</i>	2002
7	City of Fairbank ^c	4.9%	<i>Green City Energy</i>	2003
8	Silicon Valley Power ^a	4.8%	<i>Santa Clara Green Power</i>	2004
9	Moorhead Public Service	4.7%	<i>Capture the Wind</i>	1998
10	Central Electric Cooperative ^e	4.6%	<i>Green Power</i>	1999

^a Marketed in partnership with 3 Phases Energy Services

^b Product is *Green-e* certified (www.green-e.org).

^c Program offered in association with the Iowa Association of Municipal Utilities.

^d Some products marketed in partnership with Green Mountain Energy Company.

^e Power supplied by PNGC Power.

**Table C-4: Price Premium Charged for New, Customer-Driven Renewable Power^a
(as of December 2005)**

Rank	Utility	Resources Used	Premium (¢/kWh)
1	Xcel Energy ^{bc}	Wind	-0.67
2	Edmond Electric ^{bd}	Wind	-0.45
3	OG&E Electric Services ^b	Wind	-0.25
4	Avista Utilities	Wind	0.33
5	Western Farmers Electric Cooperative	Wind	0.50
6	Austin Energy ^b	Wind, landfill gas	0.70
6	Clallam County Public Utility District ^b	Landfill gas	0.70
8	PacifiCorp ^e	Wind, biomass, solar	0.78
9	Wabash Valley Power Association ^f	Landfill gas	0.90
10	Eugene Water and Electric Board ^b	Wind	0.91

^a Includes only programs that have installed or announced firm plans to install or purchase power from 100% new renewable resources.

^b Premium is variable; customers in these programs are exempt or otherwise protected from changes in utility fuel charges.

^c Public Service Company of Colorado only. Product is *Green-e* certified (www.green-e.org).

^d Power supplied by Oklahoma Municipal Power Authority.

^e Pacific Power *Blue Sky Usage* product; only available in Oregon. Product marketed in partnership with 3 Phases Energy Services.

^f The premium charged by participating member distribution utilities varies from 0.9¢/kWh to 1.0¢/kWh.

REPORT DOCUMENTATION PAGE

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14. ABSTRACT (Maximum 200 Words) In the early 1990s, only a handful of utilities offered their customers a choice of purchasing electricity generated from renewable energy sources. Today, more than 600 utilities—or about 20% of all utilities nationally—provide their customers a “green power” option. Because some utilities offer programs in conjunction with cooperative associations or other publicly owned power entities, the number of distinct programs totals more than 130. Through these programs, more than 50 million customers have the ability to purchase renewable energy to meet some portion or all of their electricity needs—or make contributions to support the development of renewable energy resources. Typically, customers pay a premium above standard electricity rates for this service. This report presents year-end 2005 data on utility green pricing programs, and examines trends in consumer response and program implementation over time. The data in this report, which were obtained via a questionnaire distributed to utility green pricing program managers, can be used by utilities to benchmark the success of their green power programs.				
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