



Ms. Elizabeth O'Donnell
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40602-0615

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State Regulation and Rates
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Rick E. Lovekamp
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February 9, 2007

RE: Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Approval of Their Proposed Green Energy Riders
Case No. 2007-00 067

Dear Ms. O'Donnell:

Enclosed please find and accept for filing the original and ten (10) copies of Louisville Gas and Electric Company and Kentucky Utilities Company's ("collectively the Companies") Application and Testimony in the above-referenced matter.

The Companies' will file with the Commission an executed copy of their contract with 3 Phases Climate Solutions, LLC on or before February 16, 2007.

Should you have any questions concerning the enclosed, please do not hesitate to contact me.

Sincerely,

Rick E. Lovekamp

cc: Hon. Elizabeth E. Blackford
Hon. Michael L. Kurtz

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

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PUBLIC SERVICE
COMMISSION

In the Matter of:

JOINT APPLICATION OF LOUISVILLE GAS)
AND ELECTRIC COMPANY AND KENTUCKY)
UTILITIES COMPANY FOR APPROVAL OF)
THEIR PROPOSED GREEN ENERGY RIDERS)

CASE NO. 2007-00067

JOINT APPLICATION OF
LOUISVILLE GAS AND ELECTRIC COMPANY
AND KENTUCKY UTILITIES COMPANY

Louisville Gas and Electric Company (“LG&E”) and Kentucky Utilities Company (“KU”) (collectively, the “Companies”) respectfully petition the Kentucky Public Service Commission (“Commission”) for an order approving their proposed Small and Large Green Energy Riders, Electric Rate Schedules SGE and LGE, as described in detail herein. The Companies request approval to implement the program beginning April 14, 2007.

In support of this Joint Application, the Companies state as follows:

1. The full name and mailing address of LG&E is: Louisville Gas and Electric Company, Post Office Box 32010, 220 West Main Street, Louisville, Kentucky 40232. The full name and mailing address of KU is: Kentucky Utilities Company c/o Louisville Gas and Electric Company, Post Office Box 32010, 220 West Main Street, Louisville, Kentucky 40232. Both LG&E and KU are Kentucky corporations authorized to do business in the Commonwealth of Kentucky.

2. LG&E is a utility engaged in the electric and gas business. LG&E generates, purchases and transmits electricity, and distributes and sells electricity at retail in Jefferson County and portions of Bullitt, Hardin, Henry, Meade, Oldham, Shelby, Spencer and Trimble

Counties. LG&E also purchases, stores and transports natural gas and distributes and sells natural gas at retail in Jefferson County and portions of Barren, Bullitt, Green, Hardin, Hart, Henry, Larue, Marion, Meade, Metcalfe, Nelson, Oldham, Shelby, Spencer, Trimble and Washington Counties.

3. KU is a utility engaged in the electric business. KU generates, purchases and transmits electricity, and distributes and sells electricity at retail in the following counties in Kentucky:

| | | | |
|------------|-----------|------------|------------|
| Adair | Edmonson | Jessamine | Ohio |
| Anderson | Estill | Knox | Oldham |
| Ballard | Fayette | Larue | Owen |
| Barren | Fleming | Laurel | Pendleton |
| Bath | Franklin | Lee | Pulaski |
| Bell | Fulton | Lincoln | Robertson |
| Bourbon | Gallatin | Livingston | Rockcastle |
| Boyle | Garrard | Lyon | Rowan |
| Bracken | Grant | Madison | Russell |
| Bullitt | Grayson | Marion | Scott |
| Caldwell | Green | Mason | Shelby |
| Campbell | Hardin | McCracken | Spencer |
| Carlisle | Harlan | McCreary | Taylor |
| Carroll | Harrison | McLean | Trimble |
| Casey | Hart | Mercer | Union |
| Christian | Henderson | Montgomery | Washington |
| Clark | Henry | Muhlenberg | Webster |
| Clay | Hickman | Nelson | Whitley |
| Crittenden | Hopkins | Nicholas | Woodford |
| Daviess | | | |

4. Both LG&E and KU are regulated by the Commission pursuant to KRS Chapter 278.

5. Certified copies of the Companies' Articles of Incorporation are already on file with the Commission in Case No. 2005-00471 and are incorporated herein by reference pursuant to 807 KAR 5:001, Section 8(3).

6. Copies of all orders, pleadings and other communications related to this proceeding should be directed to:

Allyson K. Sturgeon
Corporate Attorney
E.ON U.S. LLC
220 West Main Street
Louisville, Kentucky 40202

Rick Lovekamp
Manager of Regulatory Affairs
E.ON U.S. LLC
220 West Main Street
Louisville, Kentucky 40202

7. This Joint Application is made pursuant to 807 KAR 5:001, Section 8.

8. The proposed green energy riders will be available to all customers who voluntarily want to contribute funds for green energy generated from renewable sources or to help offset costs for the purchase or development of green power sources.

9. Pursuant to the proposed green energy program, any LG&E or KU customer may elect to purchase “green energy” – an increasingly global term usually referring to the purchase and reselling of Renewable Energy Certificates (“RECs” or “Green Tags”) to support the operation and further development of renewable energy. The green energy program proposed by LG&E and KU is modeled after other proven programs in place at investor-owned utilities throughout the United States. In addition, in the future, the Companies may elect to purchase or develop green power energy sources, if voluntary contributions rise to a level that would make such efforts economically feasible.

10. Under the proposed programs, customers served under the Companies’ standard RS or GS rate schedules may elect to contribute in \$5 blocks of green energy representing 300 kWh of green energy per month pursuant to Electric Rate Schedule SGE. All other customers

may elect to participate in the proposed programs by contributing any multiple of \$13 blocks of green energy representing 1,000 kWh of green energy per month pursuant to Electric Rate Schedule LGE. In the near term, amounts collected through the proposed green energy riders will be used for the acquisition of RECs and to cover the costs of education, promotion, and research activities conducted to increase enrollment in the Companies' green energy program.

11. The Companies have contracted with a third party, 3 Phases Climate Solutions, LLC ("3 Phases"), to provide marketing support services. 3 Phases is a company with expertise in managing marketing, procurement and enrollments for green energy programs for utilities across the country. LG&E and KU will monitor all activities performed under the green energy program and coordinate with 3 Phases Energy and internal departments.

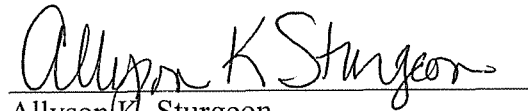
12. The following direct testimony of the Companies' witnesses supports this Application:

- a. The testimony of John Wolfram, Director, Customer Service and Marketing, E.ON U.S. Services, Inc., describes the details of the proposed green energy program and explains how the proposed program will operate.
- b. The testimony of F. Howard Bush, II, Manager, Tariffs and Special Contracts, E.ON U.S. Services, Inc., will support the proposed Electric Rate Schedules SGE and LGE filed by LG&E and KU in this proceeding.

WHEREFORE, Louisville Gas and Electric Company and Kentucky Utilities Company respectfully request that the Commission issue an order granting their Joint Application herein, and approving their proposed green energy tariff riders effective April 14, 2007.

Dated: February 9, 2007

Respectfully submitted,



Allyson K. Sturgeon

Corporate Attorney

E.ON U.S. LLC

220 West Main Street

Post Office Box 32010

Louisville, Kentucky 40232

Telephone: (502) 627-2088

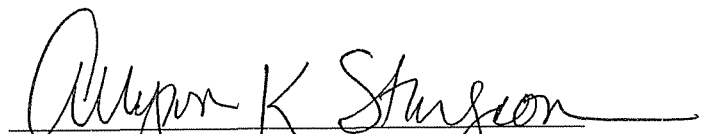
Counsel for Louisville Gas and Electric
Company and Kentucky Utilities Company

CERTIFICATE OF SERVICE

The undersigned hereby certifies that an original and ten copies of this Application was hand-delivered on the 9th day of February, 2007 to Elizabeth O'Donnell, Executive Director, Kentucky Public Service Commission, 211 Sower Boulevard, Frankfort, Kentucky 40601, and that a copy of this Application was mailed as an informational courtesy to:

David F. Boehm
Michael L. Kurtz
Boehm, Kurtz & Lowry
36 East Seventh Street, Suite 1510
Cincinnati, Ohio 45202

Elizabeth E. Blackford
Assistant Attorney General
Office of the Attorney General
Utility & Rate Intervention Office
1024 Capital Center Drive, Suite 200
Frankfort, Kentucky 40601-8204



Counsel for Louisville Gas and Electric
Company and Kentucky Utilities Company

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PUBLIC SERVICE
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**BEFORE THE
KENTUCKY PUBLIC SERVICE COMMISSION**

In the Matter of:

**JOINT APPLICATION OF LOUISVILLE GAS)
AND ELECTRIC COMPANY AND KENTUCKY)
UTILITIES COMPANY FOR APPROVAL OF)
THEIR PROPOSED GREEN ENERGY RIDERS)**

CASE NO. 2007-00067

TESTIMONY OF

**JOHN WOLFRAM
DIRECTOR, CUSTOMER SERVICE AND MARKETING
E.ON U.S. SERVICES, INC.**

Filed: February 9, 2007

1 **Q. Please state your name and business address.**

2 A. My name is John Wolfram. My business address is 820 West Broadway,
3 Louisville, Kentucky 40202.

4 **Q. What is your position?**

5 A. I am the Director, Customer Service and Marketing for E.ON U.S. Services Inc.

6 **Q. Have you previously testified before the Kentucky Public Service
7 Commission (“Commission”)?**

8 A. Yes. I provided testimony in KU and LG&E generation CCN proceedings (Case
9 Nos. 2002-00029 and 2002-00381) and transmission line CCN proceedings (Case
10 Nos. 2005-00467 and 2005-00472). I have provided data responses in numerous
11 other proceedings. A complete statement of my education and work
12 responsibilities is attached to my testimony as Appendix A.

13 **Q. What is the purpose of your testimony?**

14 A. The purpose of my testimony is to provide detailed information about the green
15 energy program proposed in this proceeding by Louisville Gas and Electric
16 Company (“LG&E”) and Kentucky Utilities Company (“KU”) (collectively the
17 “Companies”).

18 **Q. Are you sponsoring any exhibits?**

19 A. Yes. I am sponsoring the following exhibits:

- 20 • Exhibit JW-1 – a copy of Trends in Utility Green Pricing Programs (2005).
21 • Exhibit JW-2 - a copy of the Green-e Renewable Electricity Certification
22 Program, National Standard version 1.3.

1 **Q. What is the request of LG&E and KU in this proceeding?**

2 A. LG&E and KU are requesting approval from the Commission of their proposed
3 green energy program and associated tariff riders, Electric Rate Schedules Small
4 Green Energy Rider (SGE) and Large Green Energy Rider (LGE).

5 **Q. Please define Green Power.**

6 A. Green Power generally refers to electricity generated from renewable sources
7 including but not limited to: solar, wind, hydroelectric, geothermal, landfill
8 gas, biomass, biodiesel used to generate electricity, agricultural crops or
9 waste, all animal and organic waste, all energy crops and other renewable
10 resources deemed to be Green-e Certified.

11 **Q. Is there a difference between Green Power and Green Energy?**

12 A. Yes. When the environmental attributes of renewable power are quantified and
13 sold separately from the power itself, those attributes are known as “Green
14 Energy.”

15 **Q. Why are LG&E and KU seeking to establish a green energy program?**

16 A. The Companies are recognizing a growing interest in Green Energy on behalf
17 of our customers. Customer inquiries about Green Energy, while not
18 expressly quantified, have been increasing significantly in recent months.
19 Additionally, programs of this sort have enjoyed increasing prevalence among
20 investor-owned utilities across the country. This growth has reduced the
21 overall uncertainty of program initiation (e.g. program design, cost issues,
22 etc.) and provided LG&E and KU a greater insight into successful program
23 design.

1 **Q. What is a Renewable Energy Certificate (“REC”)?**

2 A. One REC is issued for every megawatt hour of electricity actually produced from
3 a certified, renewable energy source; it represents the environmental-benefit
4 attributes (i.e. absence of greenhouse gas emissions) associated with the
5 renewable energy. RECs have become the primary means of driving demand and
6 funding renewable energy growth in the United States. For example, if a typical
7 conventional kilowatt hour sells for 5 cents, a green kilowatt hour may cost 7
8 cents due to its higher cost of production. The environmental attributes of the
9 green kilowatt hour would then be valued at 2 cents. As a result, a REC for that
10 same megawatt of power would cost \$20. By levelizing the cost between Green
11 Power and power that is generated by fossil fuels, a renewable power generator is
12 able to sell its power on the competitive wholesale market.

13 **Q. What is a Green Tag?**

14 A. Green Tag is another name in the industry used for REC’s.

15 **Q. Please describe the green energy program proposed by LG&E and KU.**

16 A. The Companies’ green energy program as proposed is a voluntary program
17 available to all LG&E and KU customers who wish to make financial
18 contributions toward the purchase of RECs which support the operation and
19 further development of renewable energy. In addition, should these voluntary
20 contributions rise to a level that would make it economically feasible for LG&E
21 and KU to purchase or develop Green Power energy sources themselves, the
22 Companies may elect to do so. Participating customers will continue to be billed
23 for their electric and/or gas service pursuant to the applicable standard tariffs and

1 riders. Customers' contributions to the green energy program will be added to
2 their total electric bills as a separate line item.

3 **Q. How did the Companies design their proposed program?**

4 A. In preparing the design of LG&E's and KU's green energy program, the
5 Companies researched several of the top Green Energy utility programs. This
6 research included reviewing a report entitled Trends in Utility Green Pricing
7 Programs (2005) by Lori Bird and Elizabeth Brown. A copy of this Report is
8 attached hereto as Exhibit JW-1. In addition, the Companies consulted various
9 Green Energy marketers and entities to determine the most effective green energy
10 program design for LG&E and KU.

11 **Q. How will the program operate for residential and small commercial**
12 **customers?**

13 A. Any customer receiving service under Standard Rate Schedules RS or GS may
14 elect to contribute in any whole multiple of \$5 each month. Each \$5 contribution
15 from a residential or small commercial customer under Electric Rate Schedule
16 SGE will allow the Companies to acquire 300 kWh of green energy in the form of
17 RECs. RECs are commonly sold in increments of 1,000 kWh. The program will
18 aggregate the demand of many customers and purchase the appropriate quantity
19 of RECs to match the aggregate customer demand accurately.

20 **Q. How do customers sign up for the SGE Rider?**

21 A. Customers interested in participating in the SGE Rider program should contact
22 their LG&E or KU customer service center or apply online (through the utility
23 websites) to request enrollment in the program.

1 **Q. Once a customer signs up for the SGE program, how long are they obligated**
2 **to participate?**

3 A. Customers in the SGE program can request removal from the program at any time
4 and are obligated to participate until they do so.

5 **Q. Are there any restrictions on enrollment in the SGE program?**

6 A. Yes. At the time of enrollment, the customer may not owe any arrearage.
7 Customers who request removal from the program will not be permitted to re-
8 enroll for a period of twelve months.

9 **Q. How will revenues generated under the SGE Rider be used?**

10 A. Based upon current market conditions, approximately 75% of every \$5 dollar
11 contribution from residential and small commercial customers will be used to
12 purchase RECs. The remaining revenue from every \$5 dollar block will be
13 applied directly to growth of the Small green energy program through education,
14 promotion, and research activities conducted to increase enrollment in the
15 program.

16 **Q. Is the allocation of 25% of the total customer contributions for program**
17 **promotion consistent with other, successful programs implemented in the**
18 **U.S.?**

19 A. Yes. In 2005, utilities reported that an average of 15% of the total green power
20 premium was spent on marketing and program administration, while the top-
21 performing programs reported spending a median of 23% and an average of 29%.
22 See Trends in Utility Green Pricing Programs (2005), page 19, attached hereto as
23 Exhibit JW-1. This program design is aimed at achieving growth in participation,

1 and a certain degree of promotion is believed to be necessary to secure increases
2 in residential customer participation beyond the initial enrollment.

3 **Q. Please describe the program that will be available to large commercial and**
4 **industrial customers.**

5 A. All customers receiving utility service from LG&E or KU pursuant to a special
6 contract or any standard rate schedule other than RS or GS may elect to contribute
7 any whole multiple of \$13 per month toward the purchase of Green Energy. For
8 each \$13 contribution from a customer pursuant to Electric Rate Schedule LGE,
9 the Companies will purchase a REC which represents the environmental attributes
10 of one megawatt hour of generation from a renewable source.

11 **Q. How do customers sign up for the LGE Rider?**

12 A. Customers electing to participate in the LGE Rider program should contact their
13 official company contact (e.g. Business Service Center or Major Account
14 manager). Such customers will be required to sign a contract for participation in
15 the program for at least one year.

16 **Q. How will revenues generated from the LGE Rider be utilized?**

17 A. Approximately 96% of every \$13 contribution from customers under the LGE
18 Rider will be used to purchase RECs. The remaining revenue from every \$13
19 block will also be applied directly to growth of the LGE program.

1 **Q. Why do the Companies expect to spend more money on education,**
2 **promotion, and development for the SGE Program than the LGE Program?**

3 A. In order to ensure a positive growth rate, additional financial support is needed for
4 educating and promotion to a mass market such as the residential/small
5 commercial customers eligible for the SGE rider. A smaller population of large
6 customers who are eligible for the LGE Rider, combined with corporate
7 obligations to purchase Green Energy and greater average quantities of Green
8 Energy per customer per month, dictates the lesser amount of “promotional fund”
9 money required per kWh for the LGE purchases.

10 **Q. How do these programs compare to programs offered by other utilities in the**
11 **country?**

12 A. LG&E’s and KU’s proposed programs are consistent with the common national
13 model for Green Energy programs. The biggest difference in any of these block-
14 based REC programs tends to be in prices, which depend largely upon the
15 renewable energy sources they are supporting. The SGE and LGE Riders’
16 premium rates of 1.6 cents/kWh (SGE) and 1.3 cents/kWh (LGE) compare
17 favorably to the national average of 2.36 cents/kWh. See Trends in Utility Green
18 Pricing Programs (2005), page 16 attached hereto as Exhibit JW-1.

19 **Q. Will the Companies use these funds to actually purchase or develop**
20 **renewable resources?**

21 A. Not at this time. LG&E and KU green energy funds will be paid (through a third
22 party as discussed below) to renewable energy producers as compensation for past
23 production of the associated kilowatt hours and for development of additional

1 sources of Green Power. However, should the actual purchase or development of
2 Green Power by LG&E and KU become economically feasible in the future, the
3 Companies may elect to do so.

4 **Q. What sources of energy will qualify under the proposed Green Energy tariff?**

5 A. The criteria for these sources are primarily determined by the Center for Resource
6 Solutions, who are the administrators of the “Green-e certification” and these
7 Green-e certification criteria have become the primary standard for defining
8 renewable energy sources that are eligible for supplying voluntary green-pricing
9 programs, carbon credits, and RPS-compliant credits, among others. A copy of
10 the “Green-e” national standard is attached hereto as Exhibit JW-2. LG&E and
11 KU will purchase RECs only from approved Green-e sources that satisfy these
12 criteria and that are located in the region. In addition, the Companies and/or the
13 third party will seek Green-e certification for the program as a whole.

14 **Q. How will the Companies market the Green Energy tariffs to its customers?**

15 A. Educating customers on the availability of the program and on the environmental
16 benefits of Green Power generation is essential to maximizing the number of
17 participants and to the overall success of the program. LG&E and KU plan to
18 initially market these tariff riders through existing utility communications, such as
19 the bill, the bill envelope, “bill stuffers”, web pages, community presentations,
20 and media relations (e.g. press releases). Once “program growth” funds are
21 generated through the premium charges, more effective methods of direct
22 marketing will be applied, such as direct-mail that is independent of the bill, and

1 incentive rewards (such as bumper stickers or house signs) that achieve higher
2 enrollment and encourage continuous participation.

3 **Q. How will LG&E and KU purchase the number of RECs that are necessary**
4 **for the program?**

5 A. LG&E and KU have selected 3 Phases Climate Solutions, LLC (3 Phases) to: (1)
6 procure the requisite RECs for the program; (2) manage the accounting of the
7 REC purchases; (3) ensure that their program satisfies green-e certification
8 standards of excellence and quality; (4) validate the authenticity of the RECs; and
9 (5) perform various administrative functions required in the purchase of RECs. 3
10 Phases is a nationally recognized green energy marketer (wholesale supplier of
11 RECs, and administrator/manager of green energy programs).

12 **Q. Why are LG&E and KU not performing these functions themselves?**

13 A. LG&E and KU are endeavoring to minimize program costs and optimize program
14 quality by internally managing the green energy program existing resources. The
15 administrative, regulatory and accounting functions of buying and selling RECs
16 are unique and complex to the extent that no existing KU or LG&E resources are
17 currently qualified to perform them. At this time, the cost to retain 3 Phases is less
18 than the expense anticipated for adding new resources to administer the program
19 internally.

20 **Q. How will 3 Phases be compensated for its services?**

21 A. 3 Phases will be compensated on a time-and-materials basis, as utilized, in an
22 amount not to exceed \$40,000 each year.

1 **Q. Will the costs for 3 Phases be funded from customer contributions for Green**
2 **Energy?**

3 A. No.

4 **Q. How will LG&E/KU monitor the work of 3 Phases?**

5 A. 3 Phases' work will be continuously monitored by LG&E and KU, primarily by
6 reviewing 3 Phases' accounting work and seeking validation of authenticity for
7 receipts and certificates. A significant amount of authentication is also provided
8 by the Center for Resource Solutions, who are the administrators of the "Green-e
9 certification" for green-pricing programs.

10 **Q. If the Commission approves the proposed program, are there any benefits**
11 **that may result?**

12 A. The benefits of a program like this are more general than they are customer-
13 specific. This program allows customers to help voluntarily "close the cost gap"
14 between operating fossil fuel generation resources and operating renewable
15 resources. When customers elect to participate in this program, an economic
16 incentive is provided to those entities that develop and operate renewable
17 resources. The operation of these renewable resources will partially or wholly
18 offset the use of energy which was produced by the burning of fossil fuels, and
19 may ultimately promote further development of renewable resources. By electing
20 to purchase green energy, customers will support increased use and development
21 of renewable energy sources, primarily within the region, which could result in a
22 reduction in the amount of fossil fuels that are burned overall.

1 **Q. Is participation in the program entirely voluntary on the part of the**
2 **customer?**

3 A. Yes.

4 **Q. What action should the Commission take regarding this application?**

5 A. The Commission should approve the Companies' Application concerning
6 LG&E's and KU's green energy tariff rider for implementation beginning April
7 14, 2007.


8 **Q Does this conclude your testimony?**

9 A. Yes, it does.

VERIFICATION


STATE OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, John Wolfram, being duly sworn, deposes and says that he is the Director, Customer Service and Marketing for E.ON U.S. Services, Inc., that he has personal knowledge of the matters set forth in the foregoing testimony, and that the answers contained therein are true and correct to the best of his information, knowledge and belief.



JOHN WOLFRAM

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 9th day of February, 2007.



Notary Public (SEAL)

My Commission Expires:

November 9, 2010

APPENDIX A

John Wolfram

Director, Customer Service & Marketing
E.ON U.S. Services, Inc.
820 West Broadway
P.O. Box 32020
Louisville, Kentucky 40232

Education

University of Notre Dame, B.S. in Electrical Engineering - 1990
Drexel University, M.S. in Electrical Engineering - 1997
Leadership Louisville 2006

Previous Positions

LG&E Energy LLC, Louisville, Kentucky
2004 – 2005 Manager, Regulatory Affairs
2001 – 2004 Manager, Regulatory Policy & Strategy
1998 – 2001 Lead Planning Engineer, Generation Planning
1997 – 1998 Trader, Energy Marketing

PJM Interconnection, Norristown Pennsylvania
1994 – 1997 Senior Engineer, Operations Planning
1990 – 1993 Engineer, Operations Planning

Cincinnati Gas & Electric Company
1993 – 1994 Project Consultant, Energy Management System

Other Associations

Greater Louisville Regional Board for Commonwealth Fund for KET
Edison Electric Institute, Economic Regulation & Competition Committee
Institute of Electrical & Electronics Engineers and IEEE Power Engineering Society



NREL National Renewable Energy Laboratory

Innovation for Our Energy Future

*A national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy*

Trends in Utility Green Pricing Programs (2005)

Lori Bird and Elizabeth Brown

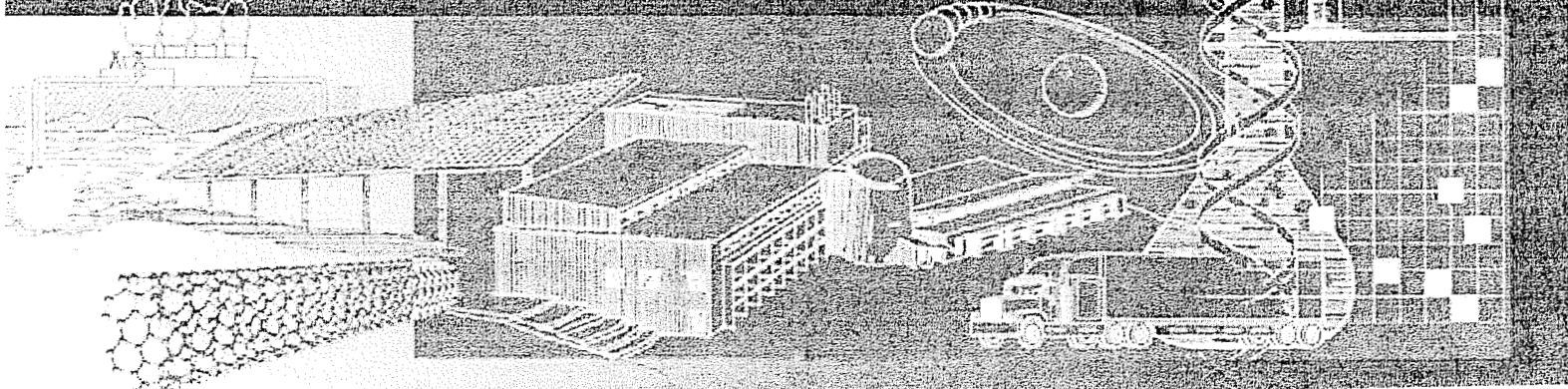
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Trends in Utility Green Pricing Programs (2005)

Lori Bird and Elizabeth Brown

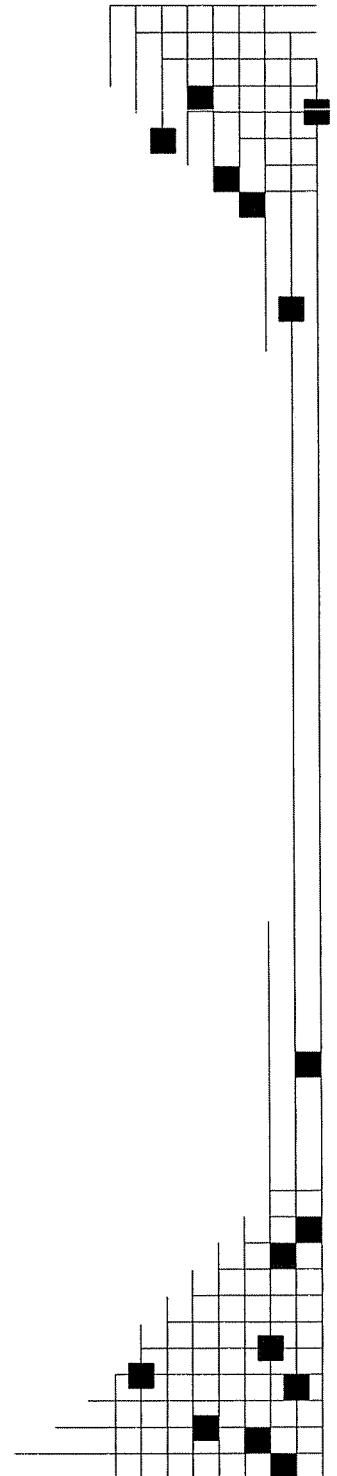
Prepared under Task No. ASG6.1003

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October 2006

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Acknowledgments

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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.
- 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 | Geothermal | 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

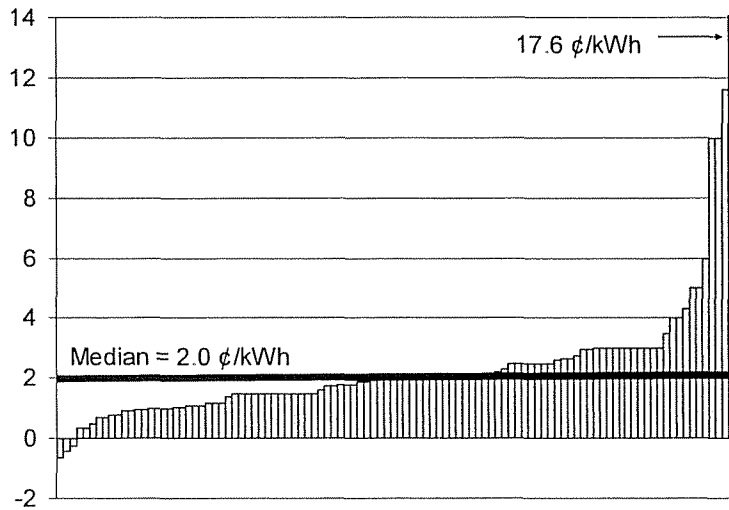


Figure 1: Utility Green Pricing Program Premiums (Energy-Based Programs Only)

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 | 25 th Percentile | Median | 75 th 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 |

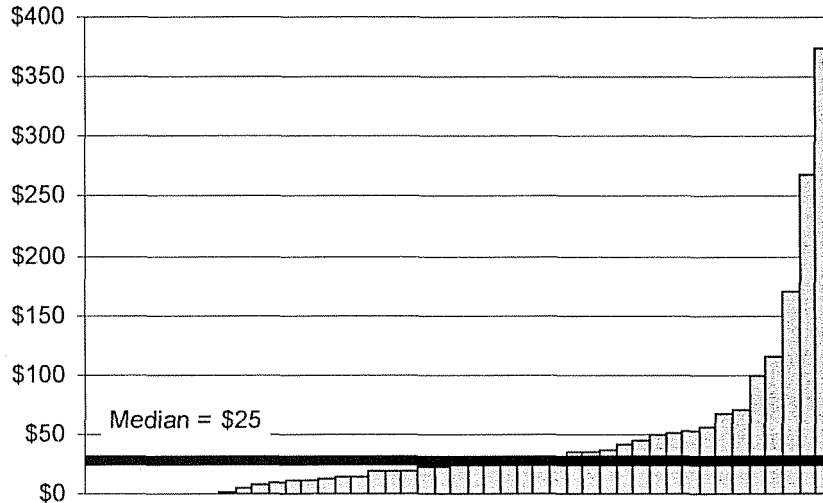


Figure 2: Customer-Acquisition Costs, 2005

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% |
| <p>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.</p> | | | | | |

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.

References

- Bird, L. and E. Brown, 2005. *Trends in Utility Green Pricing Programs (2004)*. Golden, CO: National Renewable Energy Laboratory, NREL/TP-620-38800. October. <http://www.eere.energy.gov/greenpower/resources/pdfs/38800.pdf>
- Bird, L. and K. Cardinal, 2004. *Trends in Utility Green Pricing Programs (2003)*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-620-36833, September. <http://www.eere.energy.gov/greenpower/pdfs/36833.pdf>
- Bird, L. and B. Swezey, 2005a. *Green Power Marketing in the United States: A Status Report (Eighth Edition)*, NREL/TP-620-38994. Golden, CO: National Renewable Energy Laboratory, October. <http://www.eere.energy.gov/greenpower/resources/pdfs/38994.pdf>
- Bird, L. and B. Swezey, 2005b. *Estimates of New Renewable Energy Capacity Serving U.S. Green Power Markets (2004)*. Golden, CO: National Renewable Energy Laboratory, May. http://www.eere.energy.gov/greenpower/resources/tables/new_gp_cap.shtml
- Bird, L. and B. Swezey, 2004. *Green Power Marketing in the United States: A Status Report (Seventh Edition)*, NREL/TP-620-36823. Golden, CO: National Renewable Energy Laboratory, September. <http://www.eere.energy.gov/greenpower/pdfs/36823.pdf>
- Bird, L., B. Swezey, and J. Aabakken, 2004. *Utility Green Pricing Programs: Design, Implementation, and Consumer Response*. Report prepared by National Renewable Energy Laboratory, Golden Colorado, February. NREL/TP-620-35618. http://www.eere.energy.gov/greenpower/resources/pdfs/nrel_35618.pdf
- Farhar, B., 1999. *Willingness to Pay for Electricity from Renewable Resources: A Review of Utility Market Research*, NREL/TP-550-26148. Golden, CO: National Renewable Energy Laboratory, July. http://www.eere.energy.gov/greenpower/farhar_26148.html
- Holt, E.A., and M. Holt, 2004. *Green Pricing Resource Guide (2nd Edition)*, Ed Holt & Associates, Inc., Harpswell, Maine. Prepared for the American Wind Energy Association, Washington DC, September. <http://www.awea.org/greenpower/greenPricingResourceGuide040726.pdf>
- Lieberman, D., 2002. *Green Pricing at Public Utilities: A How-To Guide Based on Lessons Learned to Date*, Prepared for the Public Renewables Partnership by the Center for Resource Solutions, San Francisco, California, October.
- Swezey, B. and L. Bird, 2001. *Utility Green Pricing Programs: What Defines Success?* NREL/TP-620-29831. Golden, CO: National Renewable Energy Laboratory, August. <http://www.eere.energy.gov/greenpower/29831.pdf>

Swezey, B. and L. Bird, 2000. *Green Power Marketing in the United States: A Status Report (Fifth Edition)*, NREL/TP-620-28738. Golden, CO: National Renewable Energy Laboratory, August. <http://www.eere.energy.gov/greenpower/pdf/28738.pdf>

Swezey, B. and L. Bird, 1999. *Information Brief on Green Power Marketing (Fourth Edition)*, NREL/TP-620-26901. Golden, CO: National Renewable Energy Laboratory, August. http://www.nrel.gov/analysis/ema/brief_4.html

Washington Department of Community, Trade and Economic Development (CTED) and Utilities Transportation Commission (UTC), 2005. *Green Power Programs in Washington: 2005 Report to the Legislature*. Olympia, WA, December. http://qa.cted.wa.gov/CTED/documents/ID_2641_Publications.pdf

Wiser, R., S. Olson, L. Bird and B. Swezey, 2004. *Utility Green Pricing Programs: A Statistical Analysis of Program Effectiveness*, LBNL-54437. Berkeley, CA: Lawrence Berkeley National Laboratory, February. http://www.eere.energy.gov/greenpower/resources/pdfs/lbnl_54437.pdf

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.

I. 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

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

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 ^{cf} | 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>Windsorce^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 ^b | <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 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 Green Source 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 ^c | 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

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Green-e Renewable Electricity Certification Program
National Standard Version 1.3

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I. INTRODUCTION

This is the Green-e Standard for Renewable Energy Products in all regions of the United States. The following criteria apply to all Green-e certified products (Renewable Energy Certificates, utility green pricing programs, and competitive market electricity products).

This is considered a dynamic document and may change over time to accommodate changes in the renewable energy marketplace, policy changes that affect renewable energy, and/or innovations in renewable energy technology. For any substantial changes to the Green-e certification criteria document, the Green-e Program commits that:

1. Stakeholders will be solicited in advance of Green-e Governance Board meetings for input on substantive policy change issues; and
2. At least one year of notice (following the date of announcement of Board approval) will be granted to utilities, green power marketers and other stakeholders before the substantive changes go into effect, unless a more timely change is necessary to respond to a significant and imminent problem threatening the integrity of green power markets.

Marketers of Green-e certified products may petition Green-e for an exemption from specific changes in the criteria if they can document current contracts or other conditions that prevent them from meeting the change.

Changes that are not limiting to marketers of Green-e certified products (i.e. will impose no burden on currently certified products) or need to be implemented in the short term to accommodate external policy changes may take effect immediately upon Board approval.

Additional details about the Green-e certification criteria, the application process, verification protocol, marketing compliance review, etc. can be found in the Green-e Code of Conduct and Customer Disclosure Requirements, available on our website www.green-e.org. The criteria presented below will go into effect on January 1, 2007.

II. ELIGIBLE SOURCES OF SUPPLY

A. Definition of Eligible Renewables

The following types of renewable energy are eligible to supply Green-e certified products:

- 1) Solar Electric;
- 2) Wind;
- 3) Geothermal;
- 4) Hydropower from new generation capacity on a non-impoundment or new generation capacity on an existing impoundment that meets one or more of the following conditions:
 - a) The hydropower facility is certified by the Low Impact Hydropower Institute;

- b) The facility is a run-of-the-river hydropower facility with a total rated nameplate capacity equal to or less than 5 MW. Multiple turbines will not be counted separately and cannot add up to more than a 5 MW nameplate capacity; and/or
- c) The hydropower facility consists of a turbine in a pipeline or a turbine in an irrigation canal.

The Board will consider on a case-by-case basis new incremental capacity on an existing dam, where the "new" output is equal to or less than 5 megawatts.

Green-e will not certify renewables from new impoundments of water.

Green-e will consider adopting ocean-based resources and will review these technologies as they mature and as practical application reaches near term.

5) Solid, liquid, and gaseous forms of Biomass from the following fuels:

- a) All woody waste;¹
- b) All agricultural crops or waste;
- c) All animal and other organic waste;
- d) All energy crops;
- e) Landfill gas and wastewater methane; and
- f) Municipal Solid Waste is eligible if it is first converted to a clean burning fuel that is then used to generate electricity. The solid waste conversion facility for converting the municipal solid waste to a clean burning fuel must meet the following criteria²:
 - i. The facility uses a non-combustion thermal process to convert the municipal solid waste to a clean burning fuel.
 - ii. The technology is designed to produce no discharges of air contaminants or emissions, including greenhouse gases.
 - iii. The technology produces no discharges to surface or groundwaters.
 - iv. The technology produces no hazardous wastes.
 - v. To the maximum extent feasible, the technology removes all recyclable materials, including plastics, and marketable green waste compostable materials from the solid waste stream prior to the conversion process and the owner or operator of the facility certifies that those materials will be recycled or composted.
 - vi. The facility complies with all applicable laws, regulations, and ordinances.

Third-party verification that an MSW facility has met these criteria is required in order for the electricity or RECs from a facility to be used in a Green-e certified product. The California Energy Commission can provide this verification in California and TerraChoice, an environmental consulting firm, which provides facility verification services (www.terrachoice.com), may be able to provide this service in other regions. Facilities may also petition Green-e to allow an alternative third-party to perform this verification if that party meets appropriate standards.

¹ Includes "black liquor" from pulp and paper processing, mill residues, industrial waste wood, and waste wood from woodworking or wood processing, so long as the wood is not chemically treated or coated.

² Criteria adapted from the California's "Renewables Portfolio Standard Eligibility Guidebook, August 2004. This guidebook can be downloaded at: http://www.energy.ca.gov/portfolio/documents/guidebooks/2004-08-20_500-04-002F1.PDF.

Biomass resources excluded from eligibility include:

- a) Wood that has been coated with paints, plastics, or formica; and
- b) Wood that has been treated for preservation with materials containing halogens, chlorine or halide compounds like CCA-treated materials, or arsenic. (CCA = chromated copper arsenate)

Qualified wood fuels may contain de minimis quantities (less than 1% of total wood fuel) of the above excluded contaminants.

6) Biodiesel (B100) that is used to generate electricity is eligible for Green-e. Biodiesel blended with petroleum diesel is permitted if the following conditions are met:

- a) The biodiesel is separately measured (and verified) from the petroleum diesel; and
- b) Contracts are in place to allow CRS to verify that the biodiesel was converted to electricity.

Only the amount of electricity generated from the biodiesel may be counted as part of a Green-e certified product.

7) Fuel cells are eligible only if powered by hydrogen derived from any of the above eligible renewable resources.

B. Co-firing of Biomass with Non-Renewables

Co-firing of eligible forms of biomass with non-renewables is permitted if at least one of the following conditions is met:

1) The facility is located in an electric system control area that makes use of a generation tracking system (e.g., NEGIS, PJM-GATS, WREGIS) that is fully capable of accurately measuring and reporting the differentiated (biomass-fired and non-biomass-fired) electrical output from the facility; or,

2) The biomass is in a gaseous or liquid state, is separately metered and there are contracts in place to verify that the biomass portion was converted to electricity; or

3) Facilities that do not meet either of the criteria above may be eligible subject to a case-by-case review by the Green-e Governance Board. The methodology presented to Green-e must demonstrate that the Btu value of the electrical output from the facility is attributed to the eligible biomass fuel. Some of the criteria that the Board will consider in making a decision are:

- a) Whether the facility was modified to accept biomass fuel;
- b) Whether there is an independent entity involved in verifying or determining the appropriate measurement; and
- c) Whether there is a way to determine and ensure the net electricity increment being sold as "renewable" can be attributed to eligible biomass fuel. The Board would prefer a verification methodology that is brought forth by the PMAC and UGPAC that could be applied universally.

Only the amount of electricity generated from the eligible biomass may count towards the Green-e criteria.

C. Emissions Limits on Biomass

All facilities must be in compliance with all state and/or federal laws/rules regarding emissions. For facilities subject to New Source Review (NSR), the facility must be compliant with all applicable regional and state standards pertaining to NSR.

(Please note: For other facilities, the Green-e Board intends to adopt a comparable standard for biomass generators that are not subject to NSR. Stakeholders and generators are invited to provide CRS with emissions and sustainability criteria they feel are appropriate, which will be shared with the Green-e Board.)

D. Emissions Criteria for the Non-Renewable Portion of a Green-e Product

Some renewable energy products do not meet 100% of a customer's electricity load and/or will contain non-renewable energy. The emission rates per kWh for SO₂, NO_x, and CO₂ from the non-renewable portion of the eligible product may not exceed customer's average utility, state or regional power emissions rates. Rates are calculated from the latest available EPA EGRID data, unless the regional system administrator, PUC or other authority makes more up to date information available. The product may not include any specific purchases of nuclear power in the non-renewable portion of the product other than what is contained in any system power purchase (i.e. the product may not include differentiated nuclear power). A utility's or power pool's system mix may be used to satisfy the non-renewable portion of a Green-e certified product.

E. New Renewables

Only new renewables are eligible to meet Green-e standards. The term "new" is defined to include any eligible renewable facility beginning operation or repowered after January 1, 1997. Facilities placed online prior to 1997 that have been used to supply a Green-e certified product prior to 2006 will be allowed to continue in the program on a limited basis; details are provided in Appendix A.

An eligible new renewable generation facility must meet at least one of the following conditions:

- 1) Placed in operation (generating electricity) on or after January 1, 1997;
- 2) Repowered on or after January 1, 1997 such that at 80% of the fair market value of the project derives from new generation equipment installed as part of the repowering;
- 3) A separable improvement to or enhancement of an existing operating facility that was first placed in operation prior to January 1, 1997, such that the proposed incremental generation is contractually available for sale and metered separate from the existing generation at the facility;
- 4) A biomass co-firing facility that meets all requirements for biomass co-firing outlined in section III.B. above and began co-firing non-eligible fuels with eligible biomass as defined in III.A. above on or after January 1, 1997;

- 5) A 100 percent switch from a non-eligible fuel to an eligible fuel after on or after January 1, 1997;
- 6) A separately metered landfill gas resource that was not being used to generate electricity prior to January 1, 1997; and/or
- 7) A fuel cell that began generating electricity on or after January 1, 1997. The hydrogen powering the fuel cell must be derived from a facility that meets the resource eligibility requirements described in section II.A. above. The renewable resource facility does not need to meet the new date criteria.

Any enhancement of fuel source that increases generation at an existing facility, without the construction of a new or repowered, separately metered generating unit, is not eligible to participate, with the exception of new landfill gas resources identified in (5) above. An eligible "new renewable" must qualify as an "eligible renewable resource" as described herein.

Please Note: Green-e plans to consider in 2006 adopting a policy articulating the number of years a facility will be treated as "new". We will solicit stakeholder feedback on this issue.

F. Energy Storage

Energy storage systems or plants, including pumped hydroelectric storage, battery storage, compressed air energy storage, superconducting magnetic energy storage, flywheels, and super capacitors, are not energy resources. While each of these storage technologies may play an important future role in managing the delivery of non-dispatchable renewable energy, they are not in themselves a renewable energy resource. Therefore, these storage technologies themselves are not qualifying sources of renewable generation.

G. Parasitic Load

Renewable energy consumed as parasitic load of an eligible facility is not eligible for use in a Green-e certified product. Parasitic load is a load that contributes to the process of electricity generation.

III. PRODUCT SPECIFICATIONS

A. Minimum Purchase Quantity

Green-e certified products sold to residential customers must contain at least the minimum amounts of Green-e eligible renewable energy described below.

- 1) Percentage-of-Use Products: Percentage-of-Use Products: Retail electricity offerings must offset at least 25% of a residential customer's electricity usage above and beyond any state mandated Renewable Portfolio Standard (RPS) renewable amount with new renewables. If a marketer or utility offers the option to offset less than 50% of a residential customer's electricity use, they must also offer a 100% option to residential customers.
- 2) Block Products: Electricity products sold as block products must be 100% Green-e eligible renewables in a minimum size of 100 kWh/month.

Green-e certified products sold to non-residential customers have no minimum purchase quantity requirement. However, commercial purchasers interested in using the Green-e logo to promote their purchase must meet the requirements outlined in the Green-e Customer Logo Use Agreement (http://www.green-e.org/pdf/Customer_Logo_Use_Pack.pdf).

B. Vintage of Eligible Renewables

A Green-e certified product may include only renewables that are generated in the calendar year in which the product is sold, the first three months of the following calendar year, or the last six months of the prior calendar year.

C. Fully Aggregated Renewables

Green-e only certifies renewable energy products that are fully aggregated to the extent possible under law.

Green-e certified MWhs (electricity or REC) must contain all the greenhouse gas emission reduction benefits, including carbon dioxide (CO₂) reduction benefits, associated with the MWh of renewable electricity when it was generated.³

Emission reductions of capped and traded pollutants where allowances are not routinely assigned to renewable electricity generators, which include sulfur dioxide (SO₂) nationally, mercury (Hg) nationally, and the oxides of nitrogen (NO_x) regionally, are not required to be included in Green-e Certified renewable electricity or RECs.

D. Renewable Portfolio Standard (RPS) Renewables, Other Mandated Renewables, and Financial Incentives

Green-e certified products must be comprised of eligible renewable generation over and above anything required by state or federal RPS requirements. If a utility or electricity marketer is subject to an RPS, that utility must comply with its RPS. If a utility is determined to be out of compliance with its state's RPS, that may be grounds for decertification from Green-e.

Renewable energy or RECs may NOT be used in a Green-e certified product under the following circumstances:

- 1) The REC or the electricity from which the RECs are derived is being used simultaneously to meet a local, state, or federal energy mandate or other legal requirement; or
- 2) The RECs are derived from a renewable facility that has been mandated by a local, state, or federal government agency or was required under any legal requirement.

³ RECs that do not contain these attributes cannot be Green-e certified. Therefore, generation is not eligible if the GHG reduction benefits of it are claimed by other parties under a voluntary or mandatory cap and trade or other GHG regulatory scheme. This includes a case in which the utility covering the service territory where the renewable facility is located or the utility covering the service territory where the renewable electricity is delivered, claims that average system power emissions are reduced due to the operation of that renewable facility. If these claims are made, the RECs generated by the facility are not eligible for Green-e certification because another party has made a claim to the GHG reduction benefit of these RECs.

The sole exception to (1) and (2) is a facility that is generating renewable energy in excess of the government mandate or other legal contract, in which case that excess (either renewable electricity or the RECs associated with the renewable electricity) may be used in a Green-e certified product.

If the product meets 100% of a customer's electricity use with eligible renewables, Green-e allows a percentage of a product's content to be satisfied by renewable portfolio standard (RPS) state-mandated renewables up to the percentage RPS requirement. For example, if the RPS is set at 5% (either company based or product based), up to 5% of the Green-e product can be satisfied with renewable power purchased to meet a mandated RPS requirement. This applies only to products that meet 100% of a customer's electricity use with Green-e eligible renewables.

RECs or renewable energy from renewable generating facilities that obtain tax or financial incentive payments are eligible under Green-e (to the extent allowed by law, regulation, and contract language governing the tax or financial incentives program).

E. Double Counting and Use of Utility Resources

Eligible RECs or renewable energy can be used once and only once; making a claim⁴ (e.g. "we're buying wind power") is one example of a 'use' that results in retirement. Renewable energy or RECs (or the renewable or environmental attributes incorporated in that REC) that can be legitimately claimed by another party may NOT be used in Green-e REC products. Examples of prohibited double uses include, but are not limited to:

- 1) Where another party has a conflicting contract for the RECs or the renewable electricity;
- 2) Use of the renewable electricity from which the renewable energy or RECs were derived is being used in calculating another entity's product or portfolio resource mix for the purposes of marketing or disclosure;
- 3) Use of the renewable energy or REC to satisfy a government renewable energy mandate, such as an RPS; or
- 4) Use of one or more attributes of the renewable energy or REC by another party (See Section III.C. "Fully Aggregated RECs" for details).

When a utility is involved in a REC transaction, either as a generator, a purchaser of RECs, or a purchaser of the commodity electricity from which the RECs have been derived, the local utility commissions in the states where the electricity was generated and where the electricity is sold must be notified of the transactions and, in some cases, of the money received by the utility.

F. Customer-Sited facilities

On-grid customer sited (behind the meter) facilities that meet the eligible renewables definition are eligible sources for Green-e. Customer sited off-grid renewables are not eligible. Any generation unit less than or equal to 10 kW may use a conservative engineering estimate of output. CRS must pre-approve the estimation methodology. Systems over 10 kW must be metered.

⁴ Green-e plans to provide more detailed guidance in the future about claims that can be made regarding PURPA facilities, rate-based facilities, facilities that have sold their RECs, the booking of carbon emissions in registries, and other claims-related issues.

Customer-sited generators (such as net-metered solar) cannot claim to be selling/supplying renewable electricity if they sell the RECs (in part or in whole) separately. CRS will provide guidelines on how to disclose claims related to customer-sited renewable energy sources.

G. Canadian-Sited Facilities and RECs sold into Canada

RECs or electricity from Canadian-sited facilities that meet the eligible renewable definition are eligible if they are generated at facilities certified by the EcoLogo^M program, the Canadian government's environmental certification program (<http://www.environmentalchoice.com/>).

Green-e will certify RECs or electricity generated at facilities located in the U.S. to be sold into Canada provided that they meet the eligible renewable definition and the facility is certified by the EcoLogo^M program. De minimis amounts of sales to Canadian customers from facilities that are not EcoLogo participants will be tolerated.

IV. ADDITIONAL CRITERIA FOR COMPETITIVE ELECTRICITY AND UTILITY GREEN PRICING PRODUCTS

A. Geographic Eligibility for Electricity Products

For electricity products (i.e. products used to meet a customer's electricity needs), provider can source from one or more of the following geographic boundaries:

- a) The state where the customer is located; and/or
- b) The North American Electric Reliability Council (NERC) region, Independent System Operator (ISO), Regional Transmission Organization (RTO) or Balancing Authority Area of the customer being served; and/or
- c) An adjacent NERC, ISO, RTO or Balancing Authority Area region where the electricity, bundled with a REC, is wheeled into the respective region of the customer being served.

B. Use of Renewable Energy Certificates in an Electricity Product

Renewable Energy Certificates (RECs) can be combined with nonrenewable power to serve green electricity customers under the following conditions:

- a) The Renewable Energy Certificates must come from the defined geographic boundary of the customer being served as noted above if they are to be marketed as an "electricity" product; and,
- b) The emission rates per kWh for SO₂, NO_x, and CO₂ for the underlying electricity must be at or below the customer's average utility, state or regional power emissions rates.

If the RECs are sourced from outside the defined geographic boundary defined in Section IV.A. (Geographic Eligibility for Electricity Products), the product will need to be marketed as a REC product and contain the appropriate disclosure language (see Green-e Customer Disclosure Requirements).

V. ADDITIONAL CRITERIA FOR UTILITY GREEN PRICING PRODUCTS

A. Product Pricing

In no case should the above market costs of the energy used directly for a certified utility green pricing program be allocated to customers who are non-participants in the program. If such costs are related to public policy initiatives deemed acceptable by their regulators, a utility may appeal to the Green-e Board for approval.

B. Marketing and Performance Targets

If local stakeholders believe a certified program is not receiving sufficient marketing support, the stakeholders can petition CRS to require that the utility offering the program provide additional information, such as overall marketing expenditures for the certified program. All information provided by participating utilities to fulfill this criterion will be treated as confidential by the Center for Resource Solutions. The Board reserves the right to make case-by-case determinations on the adequacy of individual marketing efforts made by participating utilities.

In the event that a utility green pricing program becomes fully subscribed, consumers may have to be placed on a waiting list before they can officially subscribe to a green pricing program. If green pricing program providers have a waiting list, the waiting period must not last more than one year from when the customer seeks to join the green pricing program. Should the green pricing program provider accrue a waiting list of interested participants, the provider shall send a stand-alone letter to the waiting list on a semi-annual basis explaining why the list is not being served and what steps the provider plans to take to rectify the supply/demand imbalance. In the event that the program provider holds a waiting list, it shall notify CRS immediately stating the reasons for the insufficient supply and actions planned to remedy the situation. In the event of a semi-annual wait-list notification, the provider shall notify CRS of the event and provide the number of customers on the waiting list. Enrolling but not serving customers for more than one year may be grounds for removing certification.

C. Regulatory Approval

Certification is only available to programs that have been approved by the appropriate regulatory or oversight body with jurisdiction over the program prior to the program's nomination for certification.

D. Programs Serving Multiple Utilities (Hub and Spoke)

Some utilities are offering green pricing to customers in conjunction with other local utilities. In one such model, there is a central body (hub) that develops a renewable energy product that is marketed by more than one utility (spokes). For example, the output of a wind turbine, a landfill gas facility, and a solar array could be bundled into one product and sold by all of the members of a transmission and distribution cooperative. Since there is a single product and a single point of contact (the hub), Green-e is willing to treat this as one certification regardless of the number of vendors selling the product so long as they meet all of the conditions below.

1) In order to qualify for Green-e certification using the hub and spoke model, the product must:

- a) Contain exactly the same mix of resources for each participating vendor. The same facilities must be used and shared equally among customers. In other words, if the customers of one utility in the Midwest are purchasing 50% wind from Minnesota and 50% biomass from Wisconsin, then all participating vendors must sell the same mix of renewables from the same resources. That way Green-e can do a single verification audit. All of the renewable energy supply for the product must be sourced from the hub.
- b) Be sold within the same regional area. To receive hub-and-spoke treatment from Green-e the product resources must be sited in the same area of the country as the customer. The resources do not have to be located all in the same state, but must be in the same region (see section above; Geographic Boundaries for Sourcing Eligible Electricity) as the customers.
- c) Utilize the same marketing materials for each participating vendor. All participating vendors must use the same marketing materials. Individual utility vendors may brand the marketing materials. However, marketing materials must be consistent across the product service territory so Green-e can do a single marketing compliance review. Limited exceptions to this rule will be tolerated so long as Green-e is notified.
- d) Undergo a single verification process audit. Green-e program staff must have a single auditor as point of contact. The auditor must have access to customer records of all participating vendors.

2) What are the Obligations of the Hub and Spoke Facilitator (the Hub)?

- a) Offer the exact same product to all participating vendors.
- b) Provide a single point of contact for Green-e.
- c) Undergo a single annual verification process audit.
- d) Undergo single marketing compliance reviews.
- e) Ensure that all requirements of Green-e certification are met.
- f) Keep Green-e informed at all times regarding which distributors are marketing the product.

3) What are the Obligations of the Hub and Spoke Distributors (the Spokes)?

- a) Offer the auditor access to billing records.
- b) Abide by the Green-e Code of Conduct.
- c) Meet the Green-e Customer Disclosure Requirements, which include sending a system mix disclosure to all customers, regardless of their participation in the green pricing program.

There is a single annual fee assessed per product regardless of the number of participating vendors.

APPENDIX A: TREATMENT OF FACILITIES AND PRODUCTS THAT ARE DEEMED INELIGIBLE BY CHANGES IN CRITERIA

The intent of this new National Criteria document is to clarify existing Green-e policy and make policy changes that go into effect prospectively. Green-e realizes that some products that have been Green-e certified in the past would no longer qualify under these new standards. Therefore, Green-e will allow limited "grandfathering" of renewable energy facilities that have supplied Green-e certified products and meet the following criteria. These criteria go into effect on January 1, 2007, and all products that are granted criteria exemptions will be noted on the Green-e Web site.

1) Facility-Specific Criteria

Renewable energy facilities that do not meet the newly established national Green-e definition of "new" or "eligible" contained in this document, but that have been used to supply a Green-e certified product prior to 2006 will be allowed to continue in the program until their renewable energy contracts with the renewable energy marketer or participating utility expire. For example, a wind power facility that came online in 1996 was included in a Green-e certified product during the 2004 sales year. That facility no longer meets the "new" criteria in 2007, but can continue to supply a Green-e certified product until the renewable energy contract between the wind farm and the marketer expires. The marketer using that supply must provide copies of the contracts (which may be redacted to remove proprietary information) when re-upping their Green-e certification for 2007.

Non-conforming facilities that are owned by the entity that markets the Green-e certified product will be eligible to continue participation in Green-e for no longer than 10 years beyond their entrance into the Green-e program, unless the marketer can provide evidence to the Green-e Board that an extension should be granted.

Products that are supplied by facilities that no longer meet Green-e criteria for eligible sources of supply must disclose this information in the customer Terms and Conditions. If facilities brought online prior to 1997 are used to supply the product, the portion of energy from those facilities must be noted to customers. For example "25% of the renewable energy content of this product is supplied by facilities put online prior to 1997."

2) Product-Specific Criteria

Green-e certified products that no longer meet the Products Specifications requirements, such as electricity products that contain less than 50% renewables, will be allowed to continue in the Green-e program. Since product content disclosure has always been a required element of Green-e certification, we will continue to require that the percent of renewable content and state-specific geographic disclosure be required for these products.

We will not certify any additional products that do not meet the national Green-e criteria.

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

RECEIVED

FEB 09 2007

**PUBLIC SERVICE
COMMISSION**

In the Matter of:

**JOINT APPLICATION OF LOUISVILLE GAS)
AND ELECTRIC COMPANY AND KENTUCKY)
UTILITIES COMPANY FOR APPROVAL OF)
THEIR PROPOSED GREEN ENERGY RIDERS)**

CASE NO. 2007-00067

**DIRECT TESTIMONY OF
F. HOWARD BUSH, II
MANAGER, TARIFFS AND SPECIAL CONTRACTS
E.ON U.S. SERVICES, INC.**

Filed: February 9, 2007

1 **Q. Please state your name, position, and business address.**

2 A. My name is F. Howard Bush, II. I am the Manager of Tariffs and Special
3 Contracts for E.ON U.S. Services Inc., providing service to Louisville Gas and
4 Electric Company (“LG&E”) and Kentucky Utilities Company (“KU”). My
5 business address is 220 West Main Street, Louisville, KY 40202.

6 **Q. Have you previously testified before the Kentucky Public Service
7 Commission (“Commission”)?**

8 A. Yes. I have testified for KU in fuel clause proceedings and in a recent territorial
9 dispute with Cumberland Valley Electric Cooperative before the Commission,
10 and for LG&E in Case No. 2002-00232 involving its Prepaid Metering Program.
11 I have also supported various data responses in several previously-filed
12 Commission proceedings. A complete statement of my professional experience
13 and education is attached to this testimony as Appendix A.

14 **Q. What is the purpose of your testimony?**

15 A. The purpose of my testimony is to support the green energy riders proposed by
16 LG&E and KU in this proceeding.

17 **Q. Are you sponsoring any exhibits?**

18 A. Yes. I am sponsoring the following exhibits:

- 19 • Exhibit FHB-1 – LG&E’s proposed Small Green Energy Rider, Electric
20 Rate Schedule SGE
- 21 • Exhibit FHB-2 – LG&E’s proposed Large Green Energy Rider, Electric
22 Rate Schedule LGE

- 1 • Exhibit FHB-3 - KU's proposed Small Green Energy Rider, Electric Rate
- 2 Schedule SGE
- 3 • Exhibit FHB-4 – KU's proposed Large Green Energy Rider, Electric Rate
- 4 Schedule LGE

5 **Q. Please describe the proposed green energy riders.**

6 A. Under the proposal, customers of LG&E and KU will have the option of

7 contributing money to support the development of green power through the

8 Companies' purchase of Renewable Energy Certificates ("RECs" or "Green

9 Tags"). Participants will continue to be billed for electric service under their

10 standard applicable tariffs, including all applicable riders and adjustment clauses.

11 Copies of LG&E's and KU's proposed electric rate schedules are attached hereto

12 respectively as Exhibits FHB-1, FHB-2, FHB-3, and FHB-4. If the Companies'

13 green energy tariff riders are approved, LG&E and KU, through 3 Phases Climate

14 Solutions, LLC ("3 Phases"), will purchase the amount of RECs from the market

15 which can be adequately funded by the green energy commitments voluntarily

16 made by the Companies' retail electric customers or use those funds to develop

17 the Companies' own green power projects.

18 **Q. Why are LG&E and KU proposing two different green energy tariff riders?**

19 A. Each is directed at a different customer group and each rider has different costs

20 and risks. Residential and general service customers will have the option of

21 contributing \$5 per month for each block of 300 kWh of green energy they wish

22 to purchase. A significantly greater effort will be required to secure ongoing

23 increases in program enrollment for these customers, who only obligate

1 themselves for a month at a time. By contrast, large commercial and industrial
2 customers can contribute in \$13 increments each month for as many 1,000 kWh
3 blocks to which they wish to commit. These customers will not require the same
4 degree of effort to secure ongoing increases in program growth, will opt for larger
5 blocks of green energy, and will commit for a year at a time.

6 **Q. What is the cost of an REC?**

7 A. Based upon the Companies' contract with 3 Phases, LG&E and KU will pay 3
8 Phases \$12.50 for each REC secured by 3 Phases. As a result, for every \$5
9 collected from a residential or small commercial customer, the Companies
10 anticipate being able to purchase a portion of a REC that represents the
11 environmental attributes of 300 kilowatt hours of generation from a renewable
12 power source. Similarly, for each \$13 contribution from a large commercial or
13 industrial customer, LG&E and KU anticipate being able to purchase a REC
14 representing the environmental attributes of one megawatt hour of generation
15 from a renewable energy source.

16 **Q. Why are LG&E and KU adding an additional cost to the REC price?**

17 A. Under the proposal, LG&E and KU will add approximately 4% to the green
18 energy product price for large commercial or industrial customers, and
19 approximately 25% to the residential and small commercial price to cover
20 educational and promotional costs to encourage increased participation in the
21 program.

1 **Q. How would a change in the contract price of an REC affect the program?**

2 A. Based on the Companies' contract with 3 Phases, 3 Phases may only increase the
3 cost of a REC in the event of a change in applicable Green-e standards or
4 governing state laws or regulations, and even then, by not more than 5% each
5 year. Prior to the lapse of the Companies' contract with 3 Phases, the Companies
6 will renegotiate the contract including the costs of the RECs. Should a change in
7 the cost of RECs require a change in the SGE or LGE rate, the Companies would
8 file such a request for a change in the \$5 and \$13 block increments with this
9 Commission for approval. Then, provided the Commission gave its approval for
10 a change, the Companies would notify the customers of the change. The
11 notification would allow 60 days for all participating customers to either make an
12 adjustment in the number of blocks they subscribe for or withdraw from the
13 program altogether.

14 **Q. Why are the Companies proposing \$5 purchase increments from residential
15 and small commercial customers?**

16 A. LG&E and KU residential customers consume an average of approximately 900
17 kWh of electricity each month. A \$5 contribution to this program would result in
18 a REC purchase that would have the environmental attributes of the use of green
19 energy for one-third of this average monthly consumption. The Companies felt
20 this was the most reasonable level that was manageable for the maximum number
21 of customers and would elicit the greatest customer response.

1 **Q. The Companies are proposing large industrial and commercial customers**
2 **participate by purchasing \$13 increments. Why is the increment for them**
3 **different than that proposed for the residential and general service**
4 **customers?**

5 A. There are several reasons. First, the cost structure is different because of the
6 promotional and educational effort that will be directed at the residential and
7 general service customers. Secondly, the large industrial and commercial
8 customers will be obligating themselves for yearly periods. Lastly, because these
9 are larger customers and RECs are defined as corresponding with 1,000 kWh, the
10 pricing is set so these customers purchase a whole REC.

11 **Q. Will customers who do not elect to participate in this program absorb any of**
12 **the costs associated with this program?**

13 A. Not at this time. The revenues generated from this program will cover the cost of
14 purchasing RECs as well as the cost of all activities and resources that increase
15 program enrollment. The Companies may seek recovery of unfunded program
16 administration costs (estimated to be approximately \$50,000 per year) in future
17 rate case proceedings.

18 **Q. What will be the revenue impact?**

19 A. The program is designed to be revenue neutral. All revenues received will be
20 expended to cover either the purchase of RECs or program costs.

1 **Q. How will the Companies deal with customers who fail to provide payment**
2 **for the RECs they requested?**

3 A. While LG&E and KU want to provide customers with the ability to make a
4 difference in the environment, the Companies do not want participation to cause
5 undue hardship for their customers. As a result, customers who are unable to
6 remain current on their bills will not be eligible for participation in the program.

7 **Q. Will the Companies keep the Commission informed about program results?**

8 A. Yes. LG&E and KU will provide annual updates of the performance of the
9 proposed Green Energy Tariff Riders, which will include the number of
10 participants, amount of funds collected through the green energy program, and
11 the expenditures made during the preceding 12-month period.

12 **Q. Why is the Company restricting service under the green energy program to**
13 **coincide with the contractual period under which RECs are purchased?**

14 A. Tying the service under the proposed rate schedule to the period of the contract
15 used to purchase RECs is intended to provide a mechanism whereby the program
16 can respond to market pressures. The monies received in voluntary customer
17 participation will be used entirely to either purchase RECS, develop the
18 Companies own green power, or promote the program. Over the course of the
19 program it is conceivable prices would rise. To meet that contingency, the
20 Companies would file for a new program six months prior to the existing one
21 expiring. The existing program would continue for consistency until the
22 Commission ruled on the filing and customers would be given sixty days to
23 respond to any price change.

1 **Q. What are your recommendations for the Commission?**

2 A. It is my recommendation that the Commission approve the proposed Green Energy
3 Riders for LG&E and KU for implementation beginning April 14, 2007.

4 **Q. Does this conclude your testimony?**

5 A. Yes it does.

APPENDIX A
F. HOWARD BUSH

In May 1974, I received a Bachelor's degree in Electrical Engineering from the University of Kentucky. In addition, I have participated in company-sponsored management and computer courses and attended various industry seminars.

I joined Kentucky Utilities Company in the Company's Rate Department as a Rate Engineer. In 1983, I was promoted to Manager of Load Research within the Rate Department. Following a Company re-organization, I assumed the responsibility of Senior Financial Analyst in 1992. When Louisville Gas and Electric Company and Kentucky Utilities Company merged in 1998 my title was changed to that of Senior Rate & Regulatory Analyst. In 2001, I was promoted to Manager of Regulatory Compliance for Louisville Gas and Electric Company and Kentucky Utilities Company a position I held until assuming my current role as Manager of Tariffs/Special Contracts in 2004.

Louisville Gas and Electric Company

Original Sheet No. 59
P.S.C. of Ky. Electric No. 6

ELECTRIC RATE SCHEDULE

SGE

Small Green Energy Rider

RECEIVED

APPLICABLE

In all territory served.

FEB 09 2007

PUBLIC SERVICE
COMMISSION

AVAILABILITY OF SERVICE

Service under this rider is available to customers receiving service under Company's standard RS or GS rate schedules as an option to participate in the Company's "Green Energy Program" whereby the Company will aggregate the resources provided by the participating customers to develop green power, purchase green power, or purchase Renewable Energy Certificates.

DEFINITIONS

- a) Green power is that electricity generated from renewable sources including but not limited to: solar, wind, hydroelectric, geothermal, landfill gas, biomass, biodiesel used to generate electricity, agricultural crops or waste, all animal and organic waste, all energy crops and other renewable resources deemed to be Green-e Certified.
- b) A Renewable Energy Certificate ("REC") is the tradable unit which represents the commodity formed by unbundling the environmental-benefit attributes of a unit of green power from the underlying electricity. One REC is equivalent to the environmental-benefits attributes of one MWh of green power.

RATE

\$5.00 per 300 kWh block per month

TERMS AND CONDITIONS

- a) Customers may purchase as many whole blocks as they desire. The eligible customer may participate in Company's "Green Energy Program" by making a request to Company's Call Center or through Company's website enrollment form and may withdraw at any time through a request to Company's Call Center.
- b) Customers may not owe any arrearage prior to entering the "Green Energy Program". Any customer failing to fulfill payment for the requested blocks may be removed from the "Green Energy Program." Any Customer removed from or withdrawing from the "Green Energy Program" will not be allowed to re-apply for one year. Customer will be responsible for any billings rendered prior to withdrawing from the Green Energy program.
- c) Customer will be billed as provided for under "Rate" times the number of blocks Customer has agreed to purchase per month. Such billing will be added to Customer's billing under any standard rate schedules plus applicable riders plus applicable adjustment clauses.
- d) The service under this rate schedule shall coincide with the three year term of the contract under which Company contracts for the purchase of RECs. Six months prior to expiration of said contract Company shall file for renewal of this rate schedule with the Public Service Commission of Kentucky and may adjust block prices to reflect market conditions as they exist at that time. Upon Commission approval of any change in rate, Company will provide sixty (60) days notice for Customer to adjust the number of blocks contracted for or withdraw from the "Green Energy Program". Service under this rate schedule will continue until the Commission renders a decision on the filing for renewal.

Date of Issue: February 9, 2007

Issued By

Date Effective: April 14, 2007

John R. McCall, Executive Vice President,
General Counsel, and Corporate Secretary
Louisville, Kentucky

Louisville Gas and Electric Company

Original Sheet No. 59.1
P.S.C. of Ky. Electric No. 6

ELECTRIC RATE SCHEDULE

LGE

Large Green Energy Rider

APPLICABLE

In all territory served.

RECEIVED

FEB 09 2007

AVAILABILITY OF SERVICE

Service under this rider is available to customers receiving service under Company's standard LP, LCI-TOD, MP, LMP-TOD, or LI-TOD rate schedules as an option to participate in the Company's "Green Energy Program" whereby the Company will aggregate the resources provided by the participating customers to develop green power, purchase green power, or purchase Renewable Energy Certificates.

**PUBLIC SERVICE
COMMISSION**

DEFINITIONS

- a) Green power is that electricity generated from renewable sources including but not limited to: solar, wind, hydroelectric, geothermal, landfill gas, biomass, biodiesel used to generate electricity, agricultural crops or waste, all animal and organic waste, all energy crops and other renewable resources deemed to be Green-e Certified.
- b) A Renewable Energy Certificate ("REC") is the tradable unit which represents the commodity formed by unbundling the environmental-benefit attributes of a unit of green power from the underlying electricity. One REC is equivalent to the environmental-benefits attributes of one MWH of green power.

RATE

\$13.00 per 1,000 kWh block per month

TERMS AND CONDITIONS

- a) Customers may purchase as many whole blocks as they desire. The eligible customer may participate in Company's "Green Energy Program" by entering into a written one year agreement that will renew in one year terms until either party gives thirty (30) days notice to the other.
- b) Customers may not owe any arrearage prior to entering the "Green Energy Program". Any customer failing to fulfill payment for the requested blocks may be removed from the "Green Energy Program." Any customer removed from or withdrawing from the "Green Energy Program" will not be allowed to re-apply for one year. Customer will be responsible for any billings rendered prior to withdrawing from the Green Energy Program.
- c) Customer will be billed as provided for under "Rate" times the number of blocks Customer has agreed to purchase per month. Such billing will be added to Customer's billing under any standard rate schedules plus applicable riders plus applicable adjustment clauses.
- d) The service under this rate schedule shall coincide with the three year term of the contract under which Company contracts for the purchase of RECs. Six months prior to expiration of said contract Company shall file for renewal of this rate schedule with the Public Service Commission of Kentucky and may adjust block prices to reflect market conditions as they exist at that time. Upon Commission approval of any change in rate, Company will provide sixty (60) days notice for Customer to adjust the number of blocks contracted for or withdraw from the "Green Energy Program". Service under this rate schedule will continue until the Commission renders a decision on the filing for renewal.

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General Counsel, and Corporate Secretary
Louisville, Kentucky**

ELECTRIC RATE SCHEDULE SGE
Small Green Energy Rider

RECEIVED

APPLICABLE

In all territory served.

FEB 09 2007

**PUBLIC SERVICE
COMMISSION**

AVAILABILITY OF SERVICE

Service under this rider is available to customers receiving service under Company's standard RS or GS rate schedules as an option to participate in the Company's "Green Energy Program" whereby the Company will aggregate the resources provided by the participating customers to develop green power, purchase green power, or purchase Renewable Energy Certificates.

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- b) A Renewable Energy Certificate ("REC") is the tradable unit which represents the commodity formed by unbundling the environmental-benefit attributes of a unit of green power from the underlying electricity. One REC is equivalent to the environmental-benefits attributes of one MWh of green power.

RATE

\$5.00 per 300 kWh block per month

TERMS AND CONDITIONS

- a) Customers may purchase as many whole blocks as they desire. The eligible customer may participate in Company's "Green Energy Program" by making a request to Company's Call Center or through Company's website enrollment form and may withdraw at any time through a request to Company's Call Center.
- b) Customers may not owe any arrearage prior to entering the "Green Energy Program". Any customer failing to fulfill payment for the requested blocks may be removed from the "Green Energy Program." Any Customer removed from or withdrawing from the "Green Energy Program" will not be allowed to re-apply for one year. Customer will be responsible for any billings rendered prior to withdrawing from the Green Energy program.
- c) Customer will be billed as provided for under "Rate" times the number of blocks Customer has agreed to purchase per month. Such billing will be added to Customer's billing under any standard rate schedules plus applicable riders plus applicable adjustment clauses.
- d) The service under this rate schedule shall coincide with the three year term of the contract under which Company contracts for the purchase of RECs. Six months prior to expiration of said contract Company shall file for renewal of this rate schedule with the Public Service Commission of Kentucky and may adjust block prices to reflect market conditions as they exist at that time. Upon Commission approval of any change in rate, Company will provide sixty (60) days notice for Customer to adjust the number of blocks contracted for or withdraw from the "Green Energy Program". Service under this rate schedule will continue until the Commission renders a decision on the filing for renewal.

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**John R. McCall, Executive Vice President,
General Counsel, and Corporate Secretary
Louisville, Kentucky**

ELECTRIC RATE SCHEDULE

LGE

Large Green Energy Rider

RECEIVED

APPLICABLE

In all territory served.

FEB 09 2007

**PUBLIC SERVICE
COMMISSION**

AVAILABILITY OF SERVICE

Service under this rider is available to customers receiving service under Company's standard LP, LCI-TOD, MP, LMP-TOD, or LI-TOD rate schedules as an option to participate in the Company's "Green Energy Program" whereby the Company will aggregate the resources provided by the participating customers to develop green power, purchase green power, or purchase Renewable Energy Certificates.

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- b) A Renewable Energy Certificate ("REC") is the tradable unit which represents the commodity formed by unbundling the environmental-benefit attributes of a unit of green power from the underlying electricity. One REC is equivalent to the environmental-benefits attributes of one MWh of green power.

RATE

\$13.00 per 1,000 kWh block per month

TERMS AND CONDITIONS

- a) Customers may purchase as many whole blocks as they desire. The eligible customer may participate in Company's "Green Energy Program" by entering into a written one year agreement that will renew in one year terms until either party gives thirty (30) days notice to the other.
- b) Customers may not owe any arrearage prior to entering the "Green Energy Program". Any customer failing to fulfill payment for the requested blocks may be removed from the "Green Energy Program." Any customer removed from or withdrawing from the "Green Energy Program" will not be allowed to re-apply for one year. Customer will be responsible for any billings rendered prior to withdrawing from the Green Energy Program.
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