CRS center for resource solutions

2008 Green-e Verification Report

Green-e® is the nation's leading independent certification and verification program for renewable energy and greenhouse gas emission reductions in the voluntary market. There are three Green-e programs: Green-e Climate is a certification program that sets consumer-protection and environmental-integrity standards for carbon offsets sold in the voluntary market. Green-e Energy is the nation's leading independent certification and verification program for renewable energy. Green-e Marketplace recognizes companies that make meaningful commitments to use renewable energy by allowing them to display the Green-e logo when they have purchased a qualifying amount of renewable energy and passed the program's verification standards.

Green-e®

2008 HIGHLIGHTS

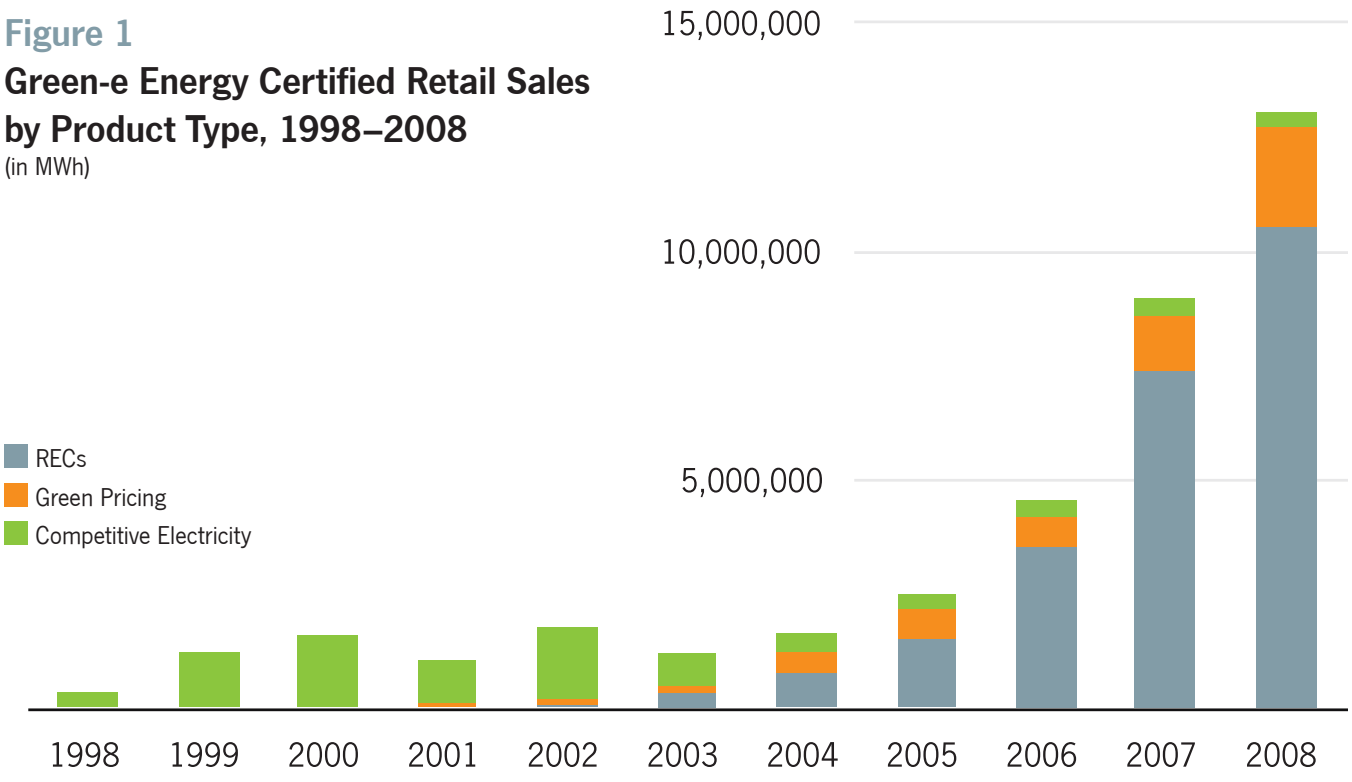
Total retail sales of Green-e Energy Certified renewable energy **exceeded 13 million MWh, an increase of 45% from 2007**.[1]

Over 500,000 residential customers and more than 20,000 commercial customers across the US and Canada purchased Green-e Energy Certified renewable energy, increases of 94% and 97%, respectively.

Renewable energy purchases and onsite generation by Green-e Marketplace participants reached **a record level of 2.9 million MWh**.

Green-e Climate began operations in February 2008, and by year end, sales of Green-e Climate certified products **exceeded 151,300 metric tons CO_2-equivalent**.

Figure 1
Green-e Energy Certified Retail Sales by Product Type, 1998–2008
(in MWh)



Introduction

Despite a downturn in the U.S. economy that caused a decrease in overall electricity consumption, markets for Green-e Energy Certified renewable energy continued to boom, reaching an all-time high during 2008.

Total certified retail transactions of renewable energy reached 13 million MWh, a 45% increase from 2007 and 54% of all retail sales in the voluntary market in 2008.

During this period, renewable energy sales of all types grew considerably, with renewable energy certificates (RECs) accounting for the largest amount of sales, as commercial and industrial end users continued to increase their commitments to clean energy. Sales of RECs on wholesale markets nearly doubled to 12.8 million MWh.

The number of customers participating in Green-e Energy Certified green pricing programs increased dramatically. Commercial green pricing customers grew from 7,700 in 2007 to 17,600, and residential customers from 193,000 to over 436,000 by year's end. Both customer types experienced increases of over 125%. This growth can be attributed to a number of utilities with existing green pricing programs joining Green-e Energy in 2008, as well as to new utility offerings gaining certification as they began their operations. In addition, customer participation rates increased among many utilities already participating in Green-e Energy. Combining all types of sales, more than 500,000 households and over 20,000 businesses now rely on certified products.

One of the noteworthy changes in the resources used to supply certified REC products is that wind dropped to 66% of the total, down from 2007's high of 81%, with generation from low-impact hydroelectricity and biomass projects making up the difference.

Evident from the impressive growth of the program is that the voluntary renewable energy market is reaching an increasingly large number of customers who clearly value purchasing renewable energy that is Green-e Energy Certified. This trend was evidenced by commercial participation in Green-e Marketplace. Overall, 66 organizations participated in the program over the course of 2008. Of these, 54 matched 100% of their electricity usage with certified renewable energy. Over 230 consumer products now display the Green-e logo.

Our newest certification program, Green-e Climate, began in February 2008 to certify retail carbon offset products. After a two-year stakeholder-driven process to develop a robust standard and a protocol for determining the eligibility of renewable energy projects that consumers could trust, the program was launched with great support from the community. It quickly grew to eight participants offering 14 of the highest quality products on the market by the end of the year.

We applaud the many individuals and organizations that went above and beyond this year by reducing their energy use and purchasing Green-e Certified renewable energy and carbon offsets. We look forward to 2009, and anticipate another year of tremendous growth in this market. ●

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"At The North Face we work to reduce our carbon footprint through measures such as installing a solar array at our distribution center, implementing lighting retrofits at our retail stores and facilities, reducing packaging materials, and increasing the recycled content of our printed materials. For the carbon emissions we cannot completely eliminate, we invest in carbon offsets. We trust Green-e Climate Certified offsets because they represent real reductions in global carbon emissions."

—Adam Mott
Corporate Sustainability Manager
The North Face

Green-e Climate

Green-e Climate launched in February 2008 to give transparency and credible oversight to greenhouse gas (GHG) emission reductions (offsets) sold in the voluntary market. Green-e Climate provides a three-step verification and certification service for retail offsets that ensures a seller's supply of offsets equals its sales, that the offset types retired are the same as those advertised, and that individual projects are independently certified to the highest standards.

Sellers of Green-e Climate Certified offsets must undergo an annual independent audit of their supply and sales, as well as a twice-annual review of their website and marketing materials. They also must source only from projects that have been certified by an Endorsed Program's eligible protocols. The Endorsed Programs include the Clean Development Mechanism, Gold Standard, Voluntary Carbon Standard (VCS), and Green-e Climate Protocol for Renewable Energy.[2]

Green-e Climate is the first program of its kind, streamlining numerous project

Green-e Climate Case Study

GREENVILLE COUNTY LANDFILL GAS PROJECT

"The County of Greenville is dedicated to improving the air quality of our environment and our community. By combining the benefits of carbon destruction, power production, and the added sale of carbon credits, this project will be an asset to the community for decades to come."

—Butch Kirven, Chairman, Greenville County Council

The Greenville County landfill gas project was the first U.S.–based project to have its carbon credits validated and certified under the Voluntary Carbon Standard. This project was the source project for Sterling Planet's Green-e Climate Certified Voluntary Carbon Units. Developed by Greenville Gas Producers, this landfill gas collection and utilization project at the Enoree municipal solid waste landfill in Greer, South Carolina, was awarded the EPA's Landfill Methane Outreach Program Project of the Year Award for 2008. Operational between 1996 and January 2007, the amount of waste in place at the time of Enoree's closure was 2,573,786 short tons. The Phase II waste cell, approximately 70 acres in size, is the site of the current carbon offset project, which began in April 2007, but not without considerable difficulty. Since costly wheeling fees prevented the local utility from buying the power, the project team had to build a power line to Duke Energy Carolinas' closest distribution line, which was on the other side of a river. This resulted in the need for additional permits and approvals from the U.S. Army Corps of Engineers, two wetland boards, and various state agencies. In spite of these barriers, with persistence and several new technological components, the project currently captures and utilizes 1,250 cubic feet of landfill gas per minute.

Find out more at: www.epa.gov/lmop/proj/prof/profile/greenvillegasproducersllc.htm

Figure 2 **Certified Sales from Voluntary Carbon Standard Projects (by resource type)**

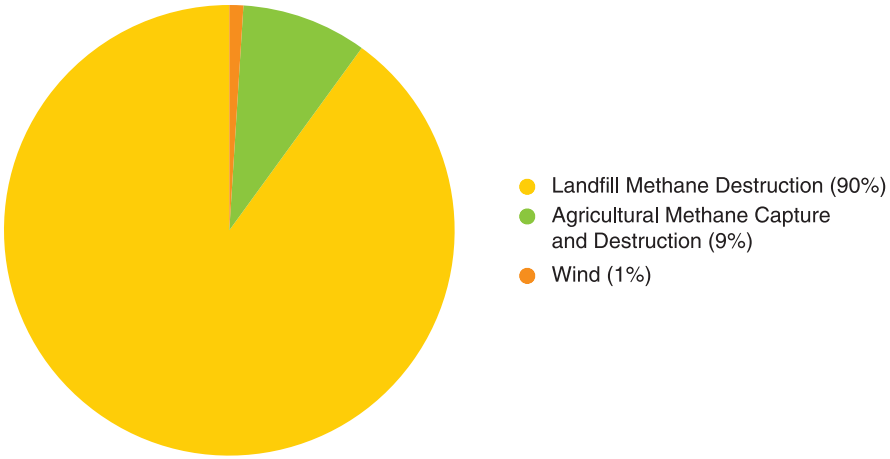


Figure 3 **Certified Sales from Green-e Climate Protocol for Renewable Energy Projects (by resource type)**

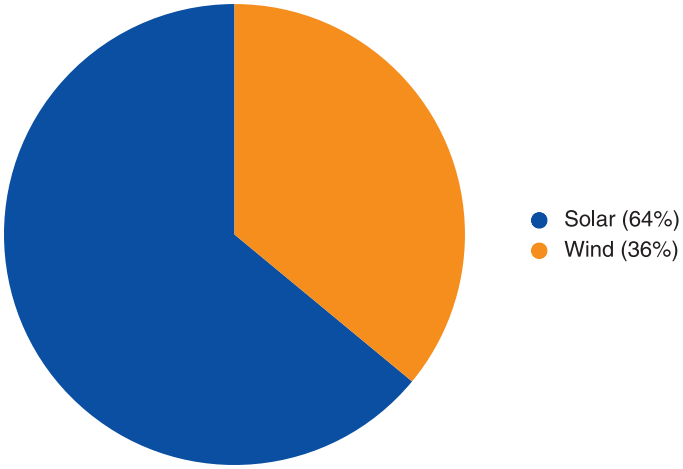
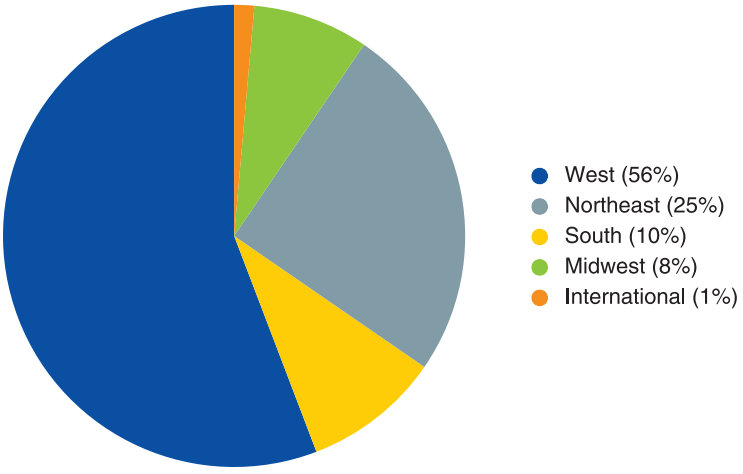


Figure 4 **Total Sales to Individuals by Customer Location (metric tons CO_2e)**



standards into one brand that consumers can trust. Customers look to the Green-e Climate logo for assurance that the emissions reductions they purchase are real, and that they are given sufficient and accurate information about their purchase. In this way, Green-e Climate adds strength and credibility to the voluntary carbon market as a mechanism to address climate change.

Summary

Green-e Climate entered the voluntary carbon market to set a new standard for transparency and stakeholder engagement. In its first year, Green-e Climate surpassed its own goals for tons of certified offsets, the number of certified products available, and the number of sellers of Green-e Climate Certified offsets. By the end of the first year, eight participants offered a total of 14 certified products from a variety of project types including renewable energy and methane destruction, for a total of 151,330 metric tons CO_2-equivalent (CO_2e) in sales. Removing instances in which the same carbon offsets were certified at both the wholesale and retail levels, Green-e Climate Certified over 136,000 unique tons of CO_2e in 2008. Sellers sourced from VCS certified projects as well as approved projects under the Green-e Climate Protocol for Renewable Energy. Solar facilities were the predominant resource for Green-e Climate certified sales, encompassing over 60% of total unique sales.

Voluntary Carbon Standard

VCS is a robust, new global standard for voluntary GHG emission reduction and removal projects and their validation and verification, and the standard was one of Green-e Climate's first Endorsed Programs. The VCS program is managed by

2008 Green-e Climate Participants

3Degrees
Bonneville Environmental Foundation
Community Energy
Conservation Services Group
Hess
Luminant
NextEra
Sterling Planet

Table 1 **Breakdown of Retail Customers of Green-e Climate Certified Products**

Customer Type	Number of Customers	Sales (in tons)
Individual	534 (71%)	3,805 (3%)
Commercial	219 (29%)	132,562 (97%)
Total	753	136,367

the VCS Association, which is an independent nonprofit organization registered under Swiss law. The founding partners of the VCS are The Climate Group, the International Emissions Trading Association and the World Business Council for Sustainable Development.

In 2008, Green-e Climate Certified offsets were sourced from multiple VCS projects located in Brazil, India, and China. The first domestic VCS project, a methane destruction project located in South Carolina (see "Green-e Climate Case Study," p. 2), was used to supply a Green-e Climate Certified product. VCS project types for Green-e Climate Certified offsets include renewable energy, agricultural methane capture and destruction, and landfill gas methane destruction. Figure 2 (p. 3) shows a breakdown of Green-e Climate Certified sales from VCS facilities by project type.

Green-e Climate Protocol for Renewable Energy

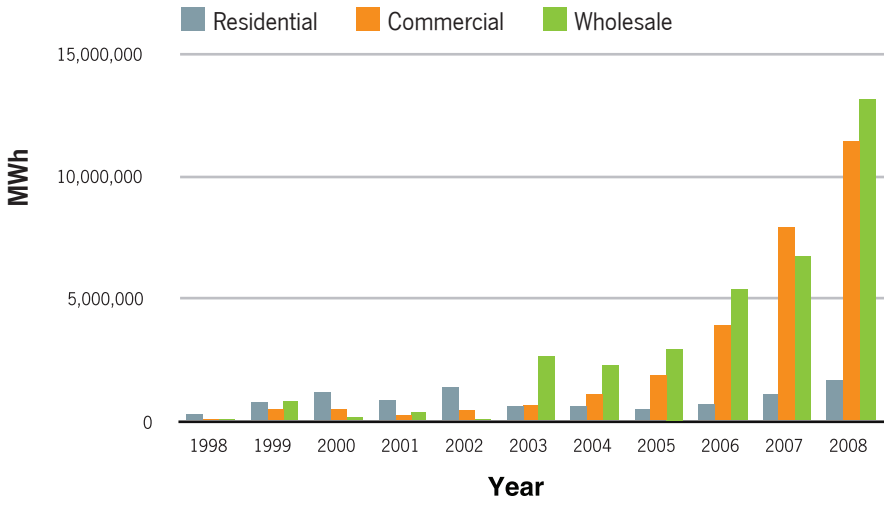
The Green-e Climate Protocol for Renewable Energy brings credibility to the market for GHG emission reductions derived from renewable energy projects in the United States. It establishes the eligibility requirements for certification of offsets from renewable energy, the methodologies used to assess additionality and calculate the emission reductions, and other requirements related to tracking, prevention of double counting and double claiming, and verification.

In 2008, nine facilities were approved under the Green-e Climate Protocol for Renewable Energy, including five solar facilities and four wind facilities located in the West, Midwest and Texas. Figure 3 (p. 3) shows a breakdown of total Green-e Climate sales from Protocol for Renewable Energy–approved facilities by project type.

Customer Breakdown

Both commercial and individual customers look for the Green-e Climate logo to ensure that their purchase is resulting in real GHG emission reductions. In 2008, commercial customers drove the market with their purchases accounting for 97% of total unique sales (see Table 1). Customers in the West accounted for a majority of purchases in both customer classes, with a strong showing in the Northeastern U.S. as well (see Figure 4, p. 3 for a breakdown on the location of individual customers).

Figure 5 **Green-e Energy Certified Sales by Customer Type, 1998–2008**



Green-e Energy

Green-e Energy is North America's leading certification program for voluntary renewable energy products. On behalf of consumers, Green-e Energy verifies that certified REC products, utility green pricing programs, and competitive electricity products undergo an independent annual audit to demonstrate compliance with Green-e Energy's rigorous consumer protection and environmental standards. Green-e Energy requires that sellers of certified renewable energy products provide full and accurate information to their customers, deliver the renewable energy they promise, and source from renewable energy generation that meets Green-e Energy's resource eligibility requirements—standards that have been refined continually by stakeholders for more than a decade. When Green-e Energy began in 1997, it was the first certification program of its kind, and it has remained the leading renewable energy certification program in the U.S.

Summary

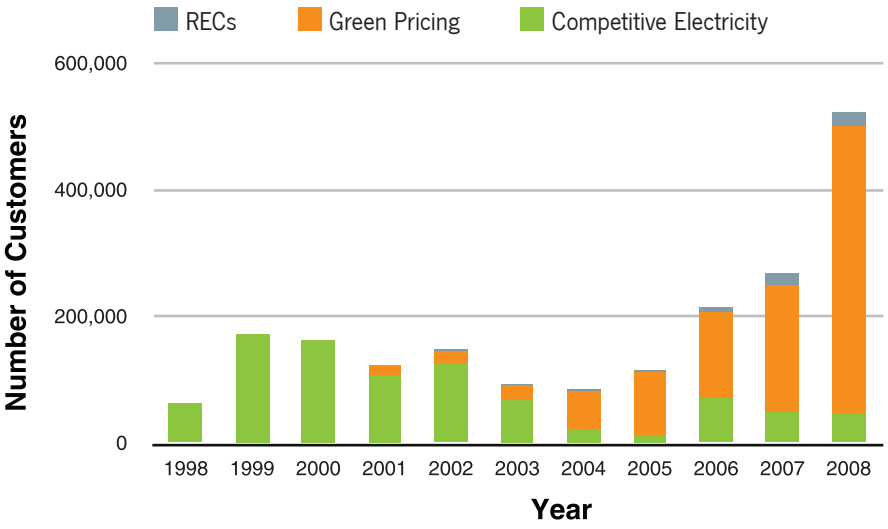
Total certified retail transactions of renewable energy reached an all-time high of 13 million MWh, a 45% increase from 2007, and representing 54% of all retail sales in the voluntary market in 2008.[3]

The total volume of all Green-e Energy Certified transactions in 2008 reached 26 million MWh, two-thirds greater than the 2007 total. This total represents transactions of all types, including both certified retail and wholesale transactions.

Green-e Energy Certified wholesale transactions reached over 13.1 million MWh in in 2008. Of these certified wholesale transactions, 8.2 million MWh were resold in Green-e Energy Certified retail transactions. The remaining 4.8 million MWh were sold in non–Green-e Energy Certified transactions to utilities and electric service providers, power marketers, retail customers, and other buyers in the renewable energy market.[4]

Removing instances where an individual MWh is sold in both a certified wholesale and retail transaction, Green-e Energy certified nearly 17.4 million "unique" MWh in 2008. Assuming that all MWh certified at the wholesale level were ultimately sold in retail voluntary sales, 74% of the total MWh sold in the retail voluntary market in 2008

Figure 6 **Retail Customers Purchasing Green-e Energy by Product Type, 1998–2008**



was involved in a Green-e Energy Certified transaction at some point in the chain of custody, an increase of 49% from 2007.[5]

This increase is part of a growing awareness among consumers and businesses of the benefits of renewable energy and their willingness to support it financially. As the public's awareness of climate change, energy security, and sustainable economic development issues has risen, so has the demand for renewable energy.

Renewable energy is sold in three different types of products:

- **Renewable Energy Certificates (RECs).** A REC represents the non-energy attributes, including all the environmental attributes, of one megawatt-hour (MWh) of renewable electricity generation. The renewable energy market developed the REC as a tradable commodity embodying renewable energy attributes that can be sold separately from the underlying electricity, allowing for a larger and more efficient national market for renewable energy.[6]
- **Green Pricing Programs.** Renewable electricity sold by electric utilities to customers that choose to receive more renewable electricity than what is included in standard electricity service.
- **Competitive Renewable Electricity.** Similar to a green pricing program, but sold by an electric service provider (ESP) in a deregulated electricity market to consumers who choose to increase their use of renewable electricity.

In 2008, retail REC sales grew to 10.5 million MWh, a 43% increase from 2007. Wholesale REC sales surged to 12.9 million MWh, an increase of 99% over the same period. Green pricing sales grew by 80% to 2.1 million MWh. Competitive electricity retail sales totalled 340,000 MWh, a decrease of 14% from 2007. Wholesale competitive electricity sales stayed at roughly the same level as 2007 with 240,000 MWh, a 0.6% increase.

Figure 1 (on inside front cover) illustrates the growth in sales of each retail product type from 1998 to 2008. During this period, renewable energy sales grew considerably, with RECs accounting for the largest volume of sales. Green pricing programs also experienced a considerable amount of growth in recent years.

2008 saw a tremendous increase in the amount of renewable energy purchased. In 2008, residential sales grew by 54% and commercial sales grew by 44% compared to 2007. Wholesale transactions almost doubled in 2008 with an astounding 95% growth from 2007 wholesale transactions. Of the 13 million MWh of certified retail sales, residential sales made up nearly 13% with commercial comprising the remaining 87%. Figure 5 charts sales growth over the past ten years by type of customer.

Table 2 lists 2008 sales by customer type and product type purchased. Noteworthy trends include commercial REC sales growth of 44% and commercial green pricing sales growth of 105% over 2007 levels. Additionally, residential sales of green pricing products grew by 70% and residential competitive electricity products by 16% over 2007 numbers.

Figure 6 illustrates the number of customers buying each type of renewable energy product over the last 10 years. As is evident from the graph, green pricing customers continue to constitute the majority of the overall number of purchasers. While the number of REC customers only grew by 5% and competitive electricity customers fell by 3%, the number of green pricing customers increased by 126%. This is a positive sign that indicates that as more utilities offer certified green pricing programs, customers are eager to enroll and are reaching into their pockets to support local renewable energy, despite the difficult economic times that began in the second half of 2008.

Table 2 **Total Sales of Green-e Certified Renewable Energy by Product Type and Customer Type, 2008 (MWh)**

	Retail		
	Residential	Commercial	Wholesale
RECs	50,000	10,490,000	12,903,000
Green Pricing	1,413,000	753,000	0
Competitive Electricity	171,000	170,000	240,000
Total Sales	1,635,000	11,413,000	13,144,000
Total Retail: 13,048,000			

The number of companies participating in Green-e Energy also grew significantly through 2008. At year end, 69 REC marketers and brokers were participating, up from 49 in 2007. At the same time, 202 green pricing utilities and their distributors participated, up from 122 in 2007. The number of competitive electricity providers remained constant at 13.

The number of states in which electricity users have access to a Green-e Energy Certified electricity products (both green pricing and competitive electricity) grew from 24 states in 2007 to 30 states in 2008. Figure 7 highlights these states. Table 3 lists the states with largest purchase volume, Table 4 (p. 6) lists the top ten states by number of customers, and Table 5 lists the top ten states by contribution of renewable energy generation used in Green-e Energy Certified retail sales in 2008.[7] The states with the most generation are different than the states with the largest sales, underscoring how the national market for RECs allows cus-

Table 3 Top Ten States Purchasing Retail Green-e Certified Renewable Energy by Percent of Total Retail Sales

MD	16%
AZ	10%
CA	10%
CO	8%
NY	7%
PA	6%
WA	5%
OR	5%
IL	4%
TX	4%

Table 4 Top Ten States by Highest Number of Retail Customers

TN	28%
CO	10%
OR	8%
WA	7%
WI	7%
MI	6%
UT	5%
MN	5%
NY	4%
CA	4%

PHOTO COURTESY IBERDROLA RENEWABLES

Green-e Energy Case Study

CASSELMAN WIND POWER PROJECT

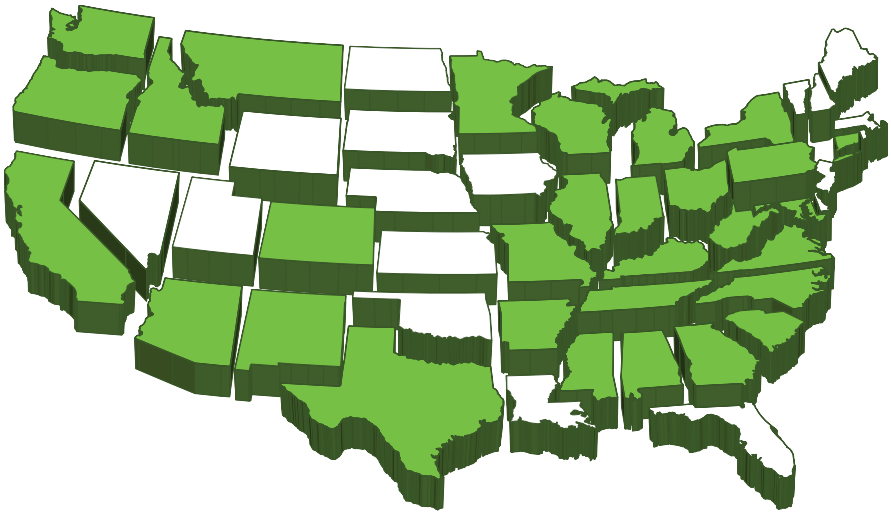
"The Casselman wind power project literally builds on Pennsylvania's long energy history, by putting land from a reclaimed coal mine to productive use with only the wind as fuel. The wind farm is a great example of how homegrown wind power is a natural fit in the community, by creating jobs, supporting the local economy, and transitioning to a clean, endless energy supply."

—Paul Copleman, Communications Manager, Iberdrola Renewables

Iberdrola Renewable's Casselman Wind Power project, located southeast of Pittsburgh, is an impressive 34.5 MW wind facility located on land reclaimed from a former coal mining site. The project began construction in May of 2007 and became operational in early 2008. It was supported by a $500,000 grant from the Pennsylvania Energy Development Authority to offset development costs. Casselman's 23 turbines are located on approximately 2,000 acres (though the turbines themselves cover less than two percent of the project's total acreage), and eight of the turbines sit directly on top of a rehabilitated surface mine. Each year, the project is expected to generate around $375,000 for the local economy through a combination of property taxes to Somerset County, and easement and landowner revenue participation payments to local landowners. At the peak of construction, the project provided 150 jobs to the region. In the last decade, Pennsylvania has been very successful at attracting renewable energy manufacturing and development, having brought over 1,000 wind turbine manufacturing jobs—including global wind turbine manufacturer Gamesa, which builds towers, blades, and nacelles in the state, some at a former U.S. Steel facility in Fairless Hills. This has helped the state transition its manufacturing base over from traditional industries and create jobs in the growing renewable energy field. Casselman is one of five wind projects in Somerset County, all of which create jobs and contribute a steady stream of taxes and lease payments to the county. Casselman is one of a number of renewable energy facilities that sell output as part of a Green-e Energy Certified product, creating jobs and economic development opportunities to the community along the way.

Find out more about the Casselman Wind Power Project at:
www.iberdrolarenewables.us/pdf/casselman-fact-sheet.pdf

Figure 7 States With Green-e Energy Certified Renewable Electricity Options, 2008



RECs are available in all U.S. states and territories.

tomers without access to local renewable energy products to support changes in the national generation portfolio.

Table 5 Top Ten States Supplying Renewable Energy to Green-e Energy Certified Retail Sales by Percent of Total, 2008

TX	17%
IA	10%
WA	7%
KS	7%
FL	6%
OK	5%
CA	4%
OR	4%
TN	4%
MN	3%

Figure 8 (p. 9) demonstrates the breakdown of resource mix delivered in certified retail products in 2008. The most significant change from 2007 is that geothermal dropped down to less than 1% from 5% and hydropower increased from 4% to 8%.

Green-e Energy Certified renewable energy is generated without the harmful effects of environmental pollutants released by electricity generation from fossil fuel sources such as coal and natural gas. Given the total MWh of Green-e Energy Certified sales in 2008, an equivalent amount of non-baseload system power would have produced estimated emissions of 7.3 million short tons of CO_2, the leading greenhouse gas contributing to global climate change; 3,900 tons of SO_2, a cause of acid rain; 3,700 tons of NO_x,

Table 6 Marketers Offering Green-e Energy Certifed RECs, 2002–2008

Year	Marketers Offering Green-e Energy Certified REC Products	Number of Green-e Energy Certified REC Products
2002	7	11
2003	18	23
2004	21	29
2005	21	28
2006	27	37
2007	49	59
2008	**69**	**80**

2008 Green-e Energy Participating REC Marketers and Brokers

3 Phases Renewables
3Degrees
Ameren Energy Marketing Company
Amerex Brokers, LLC
APS Energy Services
Aquila / KCP&L
Blue Star Energy Services
Bonneville Environmental Foundation
CarbonNeutral Company LLC / GreenLife
Carbon Solutions Group
CarbonFund.org
Choose Renewables, LLC
Clean Currents, LLC
Community Energy
Community Green Energy
Conservation Services Group
Constellation New Energy
Consumers Energy Company
Direct Energy, LP
Element Markets
Empire District Electric Company
EnergyPLUS
Enpalo
Evergreen Wind Power, LLC
Evolution Markets
Exelon Generation Company, LLC
FirstEnergy Solutions Corp
Good Energy, LP
Green Energy Marketing, Inc.
Green Mountain Energy Company
Greenhouse Gas Services, LLC
Grey K Renewable Energy Limited
GT Environmental Finance
Hampton Lumber Mills/Washington, Inc.
Hess Corporation
Iberdrola Renewables
ICAP United, Inc
Integrys Energy Services, Inc.
Intermountain REA
Juice Energy
KCP&L Greater Missouri Operations
Luminant Energy Company, LLC
MMA Renewable Ventures
MotivEarth, LLC
NativeEnergy
Neuwing Energy Ventures, LLC
New York Power Authority
Nexant Clean Energy Solutions
NextEra
Powerex Corp
Premier Energy Marketing, LLC
Puget Sound Energy
Reliant Energy
Renewable Choice Energy
Santee Cooper
Shell Energy North America
Sky Energy, Inc
Sacramento Municipal Utility District
Sterling Planet
Strategic Energy
Suez Energy Resources NA, Inc.
SunPower
Sustainable Power Corporation
Viking Wind
Village Green Energy
Vision Quest Windelectric
WindCurrent
WindStreet Energy
Xcel Energy Markets

Table 7 Sales of Green-e Energy Certified RECs by Customer Type, 2008

	2008 Sales (MWh)	Percent Change From 2007	Percent of Total REC Sales	Customers	Average Renewables Purchase Size (MWh)
Residential	50,100	-39%	0.5%	18,610	3
Commercial	10,490,340	44%	99.5%	2,330	4,500
Total Retail	**10,540,440**	**43%**	**100%**	**20,940**	
Wholesale	12,903,490	99%		180	72,090

which causes smog and ground-level pollution; and over 52 lbs of mercury, a toxic substance linked to harmful neurological health effects.[8]

Overview of Verification Requirements and Process

The data referred to in this report represents the verified sales of all certified renewable energy products sold by Green-e Energy participants in 2008. As part of product certification, participants must submit audited supply and sales information to Green-e Energy every year. This allows Green-e Energy to verify the transactional history of each MWh sold to ensure that no renewable energy is being double counted, and each customer is receiving the appropriate amount of Green-e Energy Certified renewables. Through this process CRS also verifies that the sources of renewable energy meet the Green-e Energy National Standard, which defines what types of new, clean, and renewable energy are permitted for Green-e Energy Certified products.[9]

Table 8 Utilities Offering Green-e Energy Certified Green Pricing Programs, 2001–2008

Year	Utilities with Green-e Energy Certified Green Pricing Programs	Including Number of Retail Distributors	Number of States with Green-e Energy Certified Green Pricing Programs
2001	2	n/a	7
2002	4	51	8
2003	5	70	9
2004	7	72	11
2005	8	105	12
2006	11	117	13
2007	15	141	17
2008	**24**	**202**	**24**

Renewable Energy Certificates

In 2008, 25 new REC marketers joined the program while 5 voluntarily terminated participation. Though the weakening economy forced some participants to de-certify their products, a greater number of marketers recognized the value in offering Green-e Energy Certified products in the voluntary market.

Table 6 (p. 7) lists the total number of REC marketers and the number of certified products they offered in 2008, with historical reference going back to 2002.

Table 7 summarizes Green-e Energy Certified REC sales taking place in 2008. The number of MWh sold to retail customers rose 43% from 2007. Purchases by commercial customers rose 44% in 2008, which speaks to the growing importance renewable energy holds with commercial enterprises. At the same time, residential REC sales declined 39%. This decrease in residential REC purchasing was balanced by an almost 70% increase in MWh purchased by residential green pricing customers and a 15% increase in residential competitive electricity sales, which are discussed in the following sections.

Green-e Energy Certified wholesale REC transactions also saw incredible growth, increasing 99% from 2007 levels.

Many RECs sold in Green-e Certified wholesale transactions are sold to Green-e Energy participants, which then resell

Table 9 Sales of Green-e Energy Certified Green Pricing Programs by Customer Type, 2008

	Renewables Sales (MWh)	Percent Change from 2007	Percent of Total Green Pricing Sales	Customers	Average Renewables Purchase Size (MWh)
Residential	1,413,180	69%	65%	436,230	3
Commercial	752,950	105%	35%	17,600	43
Total	**2,166,130**	**80%**	**100%**	**453,830**	

Table 10 ESPs Offering Green-e Energy Certified Electricity Products, 1998–2008

Year	Suppliers of Green-e Energy Certified Competitive Electricity Products	Number of Green-e Energy Certified Competitive Electricity Products
1998	11	15
1999	11	18
2000	17	27
2001	16	26
2002	9	19
2003	14	37
2004	13	27
2005	11	16
2006	12	17
2007	13	17
2008	**13**	**20**

the same MWh in certified retail transactions. In 2008, a total of 12.9 million MWh in RECs were certified at the wholesale level; of this, 8 million MWh were certified again in retail REC transactions. Removing instances where an individual MWh is sold in both a certified wholesale and retail transaction, the unique number of RECs sold in 2008 in certified transactions at either the retail or wholesale level reached 15.4 million MWh, a 47% increase from 2007.

Figure 9 (p. 10) displays the resource types supplying certified retail REC sales in 2008.

One of the noteworthy changes in REC resource types is that wind dropped to 66% of the total, down from 2007's high of 81%. At the same time, low-impact hydro moved up to 9% from less than one percent in 2007, and biomass rose to 21% from 12% in 2007.

Utility Green Pricing Programs

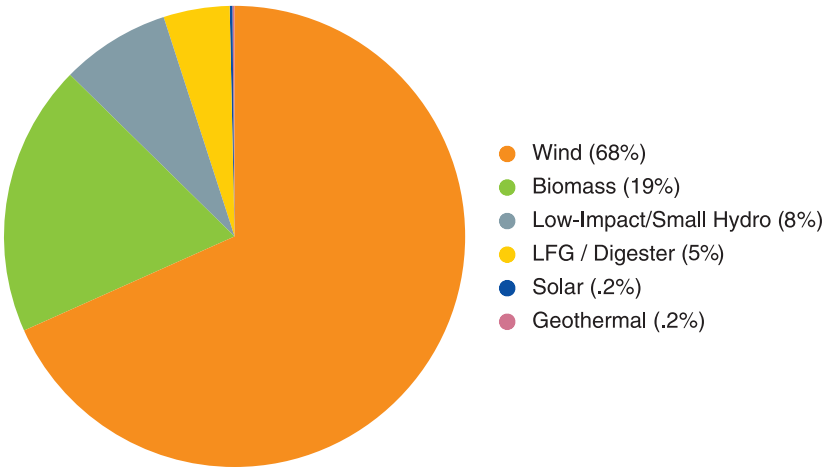
Green-e Energy Certified utility green pricing programs offer their customers the ability to purchase renewable energy for their home or business above and beyond the amount of renewable energy that is already included in the default electricity mix served to most customers. By doing so, these programs allow individuals to support renewable energy above any state renewable energy goals or mandates, such as Renewable Portfolio Standards (RPSs).

Table 8 (p. 8) presents the number of utilities offering certified green pricing programs since 2001. In 2008, nine new utilities joined the program. Including their distributor retail utilities, the number of new providers of certified green pricing programs grew by 43% to a total of 202 participating utilities. The number of states where certified green pricing programs are available increased from 17 in 2007 to 24 in 2008.

Table 9 (p. 8) summarizes certified green pricing sales in 2008 and the change from 2007 sales by customer types. Overall, certified green pricing sales increased by 80% in 2008.

In 2008, the number of customers participating in Green-e Energy Certified green pricing programs increased dramatically. The number of commercial customers grew from 7,700 in 2007 to 17,600, and residential customers from 193,000 to over 436,000 at year's end. Both customer types experienced increases of

Figure 8 Contributions of Renewable Resource Types to Total Green-e Energy Certified Sales, 2008



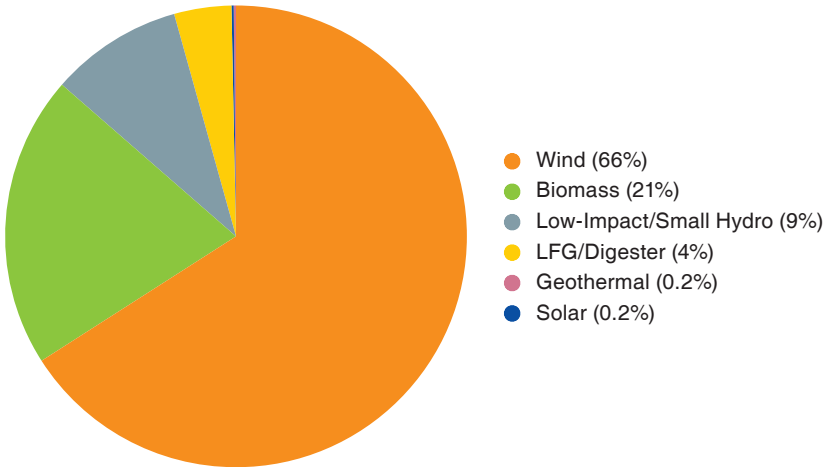
2008 Green-e Energy Green Pricing Program Participants

Alliant Energy (WI)
AmerenUE (IL, MO)
Arizona Public Service Company (AZ)
Buckeye Power, Inc. (OH)
City of Palo Alto Utilities (CA)
E. ON US., LLC (KY)
Eugene Water and Electric Board (OR)
Georgia Power (GA)
Green Power EMC (GA)
PacifiCorp (CA, ID, OR, UT, WA, WY)
Platte River Power Authority (CO)
Puget Sound Energy (WA)
Roseville Electric (CA)
Santee Cooper (SC)
Sawnee EMC (GA)
Seattle City Light (WA)
Silicon Valley Power (CA)
SMUD (CA)
TVA (AL, GA, KY, MS, NC, TN)
We Energies (WI)
WPPI Energy (WI)
Xcel Energy (CO, MN, NM)

Table 11 **Sales of Green-e Energy Certified Electricity by ESPs by Customer Type, 2008**

	Renewables Sales (MWh)	Percent Change from 2007	Percent of Total Competitive Electricity Sales	Customers	Average Renewables Purchase Size (MWh)
Residential	171,290	16%	50%	46,690	4
Commercial	169,580	-32%	50%	285	595
Total Retail	**340,870**	**-14%**	**100%**	**46,980**	
Wholesale	240,070	0.6%		6	40,010

Figure 9 **Contributions of Renewable Resource Types Sold in Retail REC Products, 2008**



New participating utilities grew by 43% to a total of 202 in 2008. The number of states where certified green pricing programs are available increased from 17 to 24.

over 125%. This growth can be attributed to a number of utilities with existing green pricing programs joining Green-e Energy in 2008, as well as to new utility offerings gaining certification in their first year. In addition, customer participation rates increased among many utilities already in Green-e Energy.

The National Renewable Energy Laboratory (NREL) annually releases a rating of utility green pricing programs[10] based on three criteria: the program's participation rate; the total number of subscribers; and the number of MWh sold. In 2008 Green-e Energy Certified green pricing programs were well represented in each category. The following Green-e Energy Certified programs were ranked among the top ten in the following categories:

- **Highest participation rate:** City of Palo Alto, Silicon Valley Power, Sacramento Municipal Utilities District (SMUD)
- **Total number of subscribers:** Xcel, PacifiCorp, SMUD, Puget Sound Energy, We Energies
- **Total MWh sold:** PacifiCorp, Xcel, SMUD, Puget Sound Energy, We Energies

Figure 10 illustrates the resource mix used to supply Green-e Energy certified green pricing programs in 2008. Wind increased its share of the total to 78%, up from 66% in 2007, and biomass increased to 13% from 1%. In addition, geothermal and low-impact hydro fell from 6% and 4% in 2007, respectively, to under 1% each in 2008.

Competitive Electricity Products

In deregulated electricity markets, electric service providers (ESPs) offer Green-e Energy Certified renewable electricity products (see "2008 Green-e Energy Electric Service Providers"). Table 10 (p. 9) lists historical participation by ESPs in Green-e Energy. In 2008, the number of participants stayed at 13 while the number of products offered grew from 17 to 20. These products were offered in 13 states.

Residential competitive electricity sales increased by 15% in 2008 while commercial sales decreased by 32%. This could in part be due to commercial customers purchasing RECs instead of competitive electricity, as commercial purchases of voluntary renewables grew overall. Table 11 breaks down competitive electricity sales by customer type, average purchase size, and change from 2007 sales.

Wholesale transactions of competitive electricity remained at roughly the same level as 2007. After removing transactions on the wholesale level that were eventually sold into a certified retail product, the unique number of MWh sold in certified competitive electricity sales came to 357,000, a 10% decrease from 2007.

Figure 11 illustrates the resource types used to supply certified retail competitive electricity products in 2008. The largest difference from 2007 is that the mix in 2008 was entirely made up of wind (83%)

and biomass (17%) while the 2007 mix included significant proportions of hydro (17%) and landfill gas (25%).

Conclusions

The volume of sales and number of customers of Green-e Energy Certified renewable energy reached all time highs in 2008. Commercial purchasers as a whole bought 44% more RECs and 105% more electricity in green pricing programs than in 2007. Residential customers purchased 70% more from their green pricing programs and 15% more from ESPs. In addition, the number of residential and commercial customers each increased by over 90%. Simply put, the number of individuals and companies that purchased a certified product in 2008 almost doubled in a single year, despite the economic downturn in the second half of the year.

Commercial purchasers bought 44% more RECs and 105% more electricity in green pricing programs in 2008. Residential customers purchased 70% more from their green pricing programs.

The total number of companies offering a product grew considerably from 194 in 2007 (including utilities' retail distributors) to 277 in 2008. Evident from the impressive growth of the program is that the voluntary renewable energy market is reaching an increasingly large number of customers who clearly value purchasing renewable energy that is Green-e Energy Certified.

As more companies offer voluntary renewable energy products and a growing number of customers strongly support renewables, the voluntary market continues to send a strong demand signal that complements that of the compliance market.

Figure 10 Contributions of Renewable Resource Types Sold in Green Pricing Programs, 2008

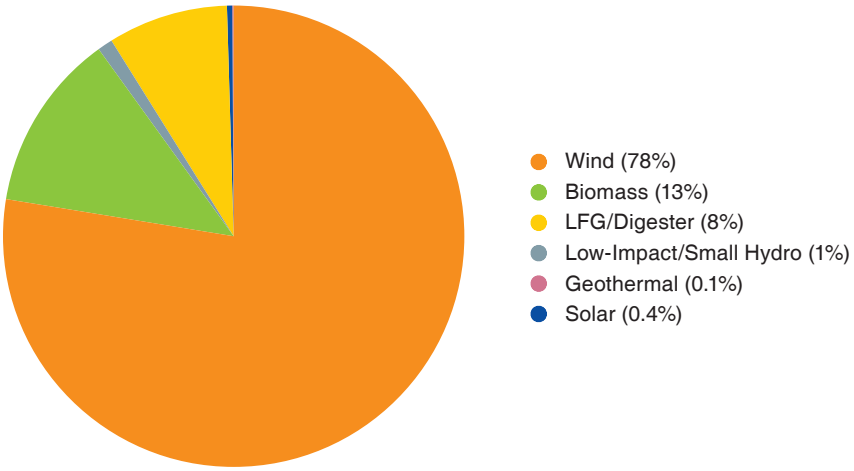
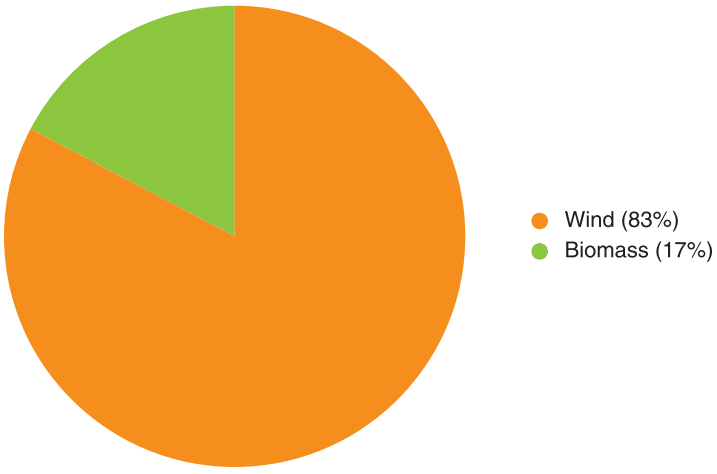


Figure 11 Contributions of Renewable Resource Types Sold in Competitive Electricity Products, 2008



Green-e Marketplace

In 2008, Green-e Marketplace continued to expand and grew to include organizations from a wide range of industries: manufacturing, paper and packaging, food and beverage, medical devices, business services, and professional sports franchises. On-product logo use also grew to over 230 consumer products. This increase in logo use has contributed tremendously to Green-e visibility. In a 2008 survey of more than 4,000 U.S. consumers, the Natural Marketing Institute (NMI) found that over 20 percent of respondents were familiar with the Green-e logo.

2008 Green-e Energy Electric Service Providers

Accent Energy Group, LLC (NY)
Ambit Energy, LP (TX, NY)
AMP Ohio (OH)
Commerce Energy (MD, PA, TX)
Community Energy (CT)
ConEdison Solutions (NY)
Consumers Energy Company (MI)
DTE Energy (MI)
Hudson Energy (TX, NY, IL)
PEPCO Energy Services (MD, D.C.)
Powerex Corp. (Canada, WA, OR, ID, MT)
Reliant Energy (TX)
TXU Energy (TX)

82% of Green-e Marketplace participants matched 100% of their electricity usage with Green-e Energy Certified renewable energy.

Renewable energy purchases and onsite generation by Green-e Marketplace participants reached a record level in 2008, totaling 2.93 million MWh. This total represents almost 23% of the total retail Green-e Energy Certified renewable energy sales. Among Green-e Marketplace participants, Intel made the largest purchase of renewable energy in history with a 1.3 million MWh purchase in January 2008. PepsiCo was the second largest REC purchaser at over 1.1 million MWh.

Overall, 66 organizations participated in Green-e Marketplace over the course of 2008. Fifty-four participants matched 100% of their organization's electricity usage with Green-e Energy Certified renewable energy. Eighty-five percent of Green-e Marketplace participants met their commitment needs through RECs, with 10% enrolled in utility green pricing programs, and 5% used on-site renewable energy generation that met the Green-e Energy National Standard. A full list of participating organizations in 2008 is listed on the opposite page.

In early 2008, Green-e Marketplace surveyed its participants and found that nearly 75% of respondents stated it was important or very important that their suppliers use third-party environmental labels to verify their green efforts. This demand for certification is echoed by NMI, which found that 60% of consumers want claims to be endorsed by a third party, and most prefer that the third party be a nonprofit organization. This data bodes well for increased participation in Green-e Marketplace moving ahead. ●

Green-e Marketplace Year in Review

PARTICIPANTS PURCHASE A RECORD 2.9 MILLION MWH IN 2008

"Buying renewable energy for nearly 50% of our U.S. operations was an important element of our continuing, multifaceted efforts to support clean energy and the environment, which includes conservation, pilot solar installations and renewable electric supplies. It is critical that all purchases are certified and validated by a respected, independent certification program like Green-e to ensure the highest quality and integrity of our actions."
—Marty Sedler, Director of Global Utilities and Infrastructure, Intel Corp.

"Our purchase of Green-e Certified RECs further advances our commitment to sustainability and helps make a positive impact in the communities we serve across the country. Our three-year purchase of more than one million MWh annually is the same amount of electricity needed to power nearly 90,000 average American homes annually. This financial instrument stimulates and supports the development of renewable electricity, and our investment matches the purchased electricity used by all of PepsiCo's U.S.-based manufacturing facilities, headquarters, distribution centers, and regional offices."
—Maria DeLorenzo, PepsiCo

2008 saw record voluntary purchases of Green-e Energy Certified renewable energy by businesses in Green-e Marketplace. These purchases were led by Intel Corp., PepsiCo, and Mohawk Paper—organizations that voluntarily support energy generated from renewable sources, which displace other non-renewable sources from the electric grid. Total purchases by Green-e Marketplace participants exceeded 2.9 million MWh in 2008. Organizations that joined the program in 2008 included Avatar New York, Beaulieu Commercial, Becton Dickinson Infusion Therapy Systems, Inc., Cascades Tissue Group, Hall Street Storage, Intel Corporation, K-1 Packaging Group, Marian Heath Greeting Cards, Millipore Corp., The Philadelphia Phillies, Solberg Manufacturing, and Unboundary.

Find out more about Green-e Marketplace at www.green-e.org/marketplace

2008 Green-e Marketplace Participants

Action Envelope
Americraft LLC
Avatar New York
AVEDA
Batdorf and Bronson Coffee Roasters
Baxter Healthcare Corporation
Beaulieu Commercial
Becton Dickinson Infusion Therapy Systems Inc.
BuyWell International, Inc.
California Fragrance—Aromafloria
Carolina Plantation Rice
Cascades Tissue Group, Sales Inc.
Choice Organic Teas
CTI Paper Group, Inc.
Curtis Packaging Corporation
DMI Industries, Inc.
Earth Color (Barton Press)
Fintura
GAR Products
Garden of Life
Globe Lithographing
Graphic Concepts Printing
Graph-Pak Corporation
Gray's Harbor Paper
Hostpapa
Intel Corporation
Intelligent Nutrients
iStoreGreen
J.S. McCarthy Printers
K-1 Packaging Group
Kelley Stoltz
KFM Foods International
Lundberg Family Farms
Marian Heath
Millipore Corporation
Mion Timberland
Mohawk Fine Papers, Inc.
Monadnock Paper Mills, Inc.
MyDeejay
National Envelope
Neenah Paper, Inc.
New Leaf Paper
New Resource Bank
Nicholas Earth Printing, LLC
OPTO 22
Pepsi Americas, Inc.
Pepsi Bottling Ventures, LLC
PepsiCo, Inc.
Philadelphia Phillies
Pizza Fusion
Print Communications Group, Inc.
Sandy Alexander, Inc.
Sappi Fine Paper North America
SC Johnson & Son
Smucker Quality Beverages—Santa Cruz Organic Juices
Solberg Manufacturing
Stoel Rives, LLP
Strathmore Artist
Sustainable Hosting
Sustainable Sourcing
The Pepsi Bottling Group, Inc.
Tom Arma Studios, Inc.
TreeCentric
True Textiles
Unboundary
Wells Fargo & Company

NOTES

1. In previous years the Green-e Energy Verification Report has highlighted the number of total transactions, which include retail and wholesale sales. This year retail and wholesale sales are separately reported, as the retail sales are more readily comparable with NREL's voluntary market sales numbers. Retail sales are sales of voluntary renewable energy products to end-use customers (residential and non-residential purchasers) that are buying renewable energy in order to make claims about their electricity use. In wholesale sales of certified renewable energy products the buyer is not the final end-user, but instead re-sells the renewable energy product (either RECs or renewable electricity) to another party.

2. The Green-e Climate Standard requires that offset projects be certified by a Green-e Climate Endorsed Program (listed at *www.green-e.org/getcert_ghg_endorsed.shtml*), but excludes certain project types (listed both on the Endorsed Program page and in the Standard, which can be found at *www.green-e.org/getcert_ghg_standard.shtml*).

3. Based on preliminary figures from NREL.

4. For sales that are not Green-e Energy Certified, Green-e Energy does not receive data on customer or market type.

5. Based on preliminary figures from NREL.

6. Center for Resource Solutions, "Best Practices in Public Claims for Green Power Purchases and Sales v.1," at *www.Green-e.org/docs/energy/Best Practices in Public Claims.pdf*. For more information on RECs, see *www.Green-e.org/learn_recs_101.shtml*.

7. For a small portion of sales of national RECs, the proportional renewable energy supply by state reported by marketers was factored into this table, in place of specific deliveries of renewables by state of generation.

8. Emissions factors based on 2005 NERC Region non-baseload output emission rates as published by the EPA, eGRID 2007 version 1.1, *www.epa.gov/cleanenergy/energy-resources/egrid/index.html*, except for mercury data, which comes from eGRID 2006 V 2.1, the latest data available at publication time. This methodology is in accordance with the Green-e Energy Code of Conduct and Customer Disclosure Requirements, available at *www.green-e.org/getcert_re_stan.shtml*.

9. Definition of Eligible Renewables
All renewables generated for a Green-e Energy Certified product must come from facilities built on or after January 1, 1997. Solar, Wind and Geothermal energy are all eligible. Hydroelectric power must come from facilities that are run of the river hydro and are less than 5 MW or for facilities above 5 MWh, Low-Impact Hydro certification is also required. Types of eligible biomass include woody, agricultural, and organic wastes, energy crops, and landfill and wastewater methane. Biomass supply is non-eligible if resources are treated or coated with chemicals and other non-organic materials. For a detailed description of eligibility requirements, please see the Green-e Energy National Standard available on the Green-e website at *www.green-e.org/getcert_re_stan.shtml*.

10. U.S. Department of Energy, "Top Ten Utility Green Power Programs" at *apps3.eere.energy.gov/greenpower/resources/tables/topten.shtml*.

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