

About Center for Resource Solutions

Center for Resource Solutions (CRS) creates policy and market solutions to advance sustainable energy and mitigate climate change. CRS is a national nonprofit with global impact. We develop expert responses to climate change issues with the speed and effectiveness necessary to provide real-time solutions. Our leadership through collaboration and environmental innovation builds policies and consumer-protection mechanisms in renewable energy, greenhouse gas reductions, and energy efficiency that foster healthy and sustained growth in national and international markets.

About Green-e

For over 16 years CRS has developed and implemented consumer-protection standards for the voluntary renewable energy and carbon offset markets through the Green-e programs. These standards mandate a rigorous accountability for retail products sold to consumers, bringing a level of transparency that can bolster consumer confidence in the industry. Green-e has three programs.

Green-e Energy is North America's leading voluntary certification program for renewable energy. Since 1997, Green-e Energy has certified renewable energy that meets environmental and consumer protection standards developed in conjunction with leading environmental, energy, and policy organizations. Green-e Energy requires that sellers of certified renewable energy disclose clear and useful information to potential customers, allowing consumers to make informed choices. For more information, see www.green-e.org/energy.

Green-e Climate is the first certification program for carbon offsets sold to consumers in the retail market. This consumer-protection program strengthens the voluntary market by providing credible oversight and transparency to retail greenhouse gas (GHG) emission reduction products (offsets), from the project to the end consumer. Consumers purchasing Green-e Climate certified offsets have clear information about the projects their GHG reductions are sourced from, and are guaranteed that no one else can claim their offset. The program verifies that a seller's supply of offsets equals their sales, that GHG reductions are independently certified, and that consumer disclosures are accurate. For more information, see www.green-e.org/climate.

Green-e Marketplace certifies companies and products across a range of industries, from food to paper manufacturers to web services, and offers them a range of services to help them better find, use, and promote clean energy and greenhouse gas emissions reductions in their operations and facilities. For more information, see www.green-e.org/marketplace.

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Summary

Since 1997, Center for Resource Solutions has focused its efforts on expanding consumer choice. Our belief is a democratic one—that the most effective and lasting way to move the dial in the right direction is to marshal the power of individuals and businesses to make a choice for clean power. Our most visible effort is Green-e, a family of certification programs that provides assurances to consumers that the product they purchase is making a difference, not double-counted, and what they are paying for. Participating companies undergo an annual verification audit, comply with Green-e's truth-in-advertising and best practices requirements, and are granted the use of the Green-e Certified logo on their products. The verification results for 2012 are presented here.

Green-e Energy

Green-e Energy showed a remarkable 29% increase in certified retail sales over 2011, reaching almost 36 million megawatt-hours (MWh), enough to power nearly a third of U.S. households for a month. Green-e certified renewable energy sales in the U.S. have increased an average of nearly 30% each year since 2008, and now Green-e certifies over 1% of the total U.S. electricity mix and approximately three-quarters of the total voluntary market.¹ Nearly half the installed wind capacity in the U.S. is participating in Green-e Energy certified transactions.

In 2012 there were over 670,000 retail purchasers of Green-e certified renewable energy, including 378,000 customers participating in a certified green pricing program—a 10% increase over last year.

Green-e Climate

As the first program of its kind, Green-e Climate is the only independent, third-party certification program for retail carbon offsets in the international voluntary carbon market. The program provides critical consumer-level protections and assurances to retail purchasers, sellers, and greenhouse gas project certification programs. The program strengthens the credibility of the voluntary carbon market in order to encourage the use of offsets by individuals and companies to reduce their greenhouse gas footprints. Green-e Climate is not a project standard—instead it builds on existing high-quality project standards and focuses on protecting retail customers.

2012 was the most successful year for Green-e Climate, with a 47% increase in the number of certified offsets from the previous year. The year also held another milestone, as the young program passed one million metric tons of carbon dioxide-equivalent reduced since its inception, continuing the trend of annual double-digit growth.

Green-e Marketplace

For organizations of every size that are looking to make the most of their efforts to reduce their environmental impact, Green-e Marketplace certifies companies demonstrating environmental leadership, and partners with them to help communicate and verify their use of certified renewable energy and carbon offsets. In 2012, over 500 diverse companies and products were certified by the program, with most growth occurring in Green-e re:print, a supply-chain program that certifies both printers and paper companies using renewable energy, allowing print custom-

Green-e Energy showed a remarkable 29% increase in 2012, reaching almost **36 million MWh**. This is enough to power nearly a third of U.S. households for a month.

ers the opportunity to use the Green-e certification mark when sourcing their printing through program participants. The program is popular among companies that want to communicate their expanded use of clean energy, including Green Mountain Coffee Roasters, Sea World, and UPS.

Taken together, the Green-e programs provide vital, independent, third-party certification and verification services for the voluntary markets for renewable energy and carbon offsets. As more consumers and businesses choose clean energy, Green-e certification becomes more important than ever to ensure that their purchases help reduce greenhouse gases and drive new renewable energy development.

1. *Status and Trends in the U.S. Voluntary Green Power Market (2012 Data)*, available at www.nrel.gov/docs/fy14osti/60210.pdf.

Green-e Energy

Green-e Energy is the leading certification program for voluntary renewable energy products in North America.

On behalf of consumers buying renewable energy products certified by Green-e Energy, the program requires that such 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 generators that meet Green-e Energy's resource-eligibility requirements, developed by stakeholders over the past 16 years.

Green-e Energy certified renewable energy products are sold in three different types:

- **Green Pricing Programs.** Renewable electricity sold by electric utilities in regulated electricity markets, provided in addition to the renewable electricity included in standard electricity service.
- **Competitive Renewable Electricity.** Similar to a green pricing program, but sold by an electric service provider in a deregulated electricity market.
- **Renewable Energy Certificates (RECs).** Each REC represents the non-electricity, renewable attributes of one megawatt-hour (MWh) of renewable electricity generation, including all the environmental attributes, and is a tradable commodity that can be sold separately from the underlying electricity, allowing for a larger and more efficient national market for renewable energy. RECs are used to track, account for, and demonstrate claims of renewable energy generation in both voluntary and compliance markets.

As the public's awareness of the impacts of pollution arising from electricity generation, energy security issues, and sustainable economic development rises, the demand for renewable energy has increased greatly, as the following pages will show. Voluntary certified renewable energy sales in the U.S. have increased an average of nearly 30% each year since 2008. When Green-e Energy began in 1997, it was the first certification program of its kind, and has remained the most respected renewable energy certification program in North America.

Figure 1

Green-e Energy Certified Retail Sales by Product Type, 1998–2012 (MWh)

In 2012, total Green-e Energy certified retail sales reached 35,987,000 MWh, a 29% increase over 2011. REC sales comprised the majority of certified sales, and sales for all product types increased compared to 2011. Certified competitive electricity sales grew by 33% and overall certified sales through green pricing programs offered by regulated utilities grew by 18% compared to 2011.

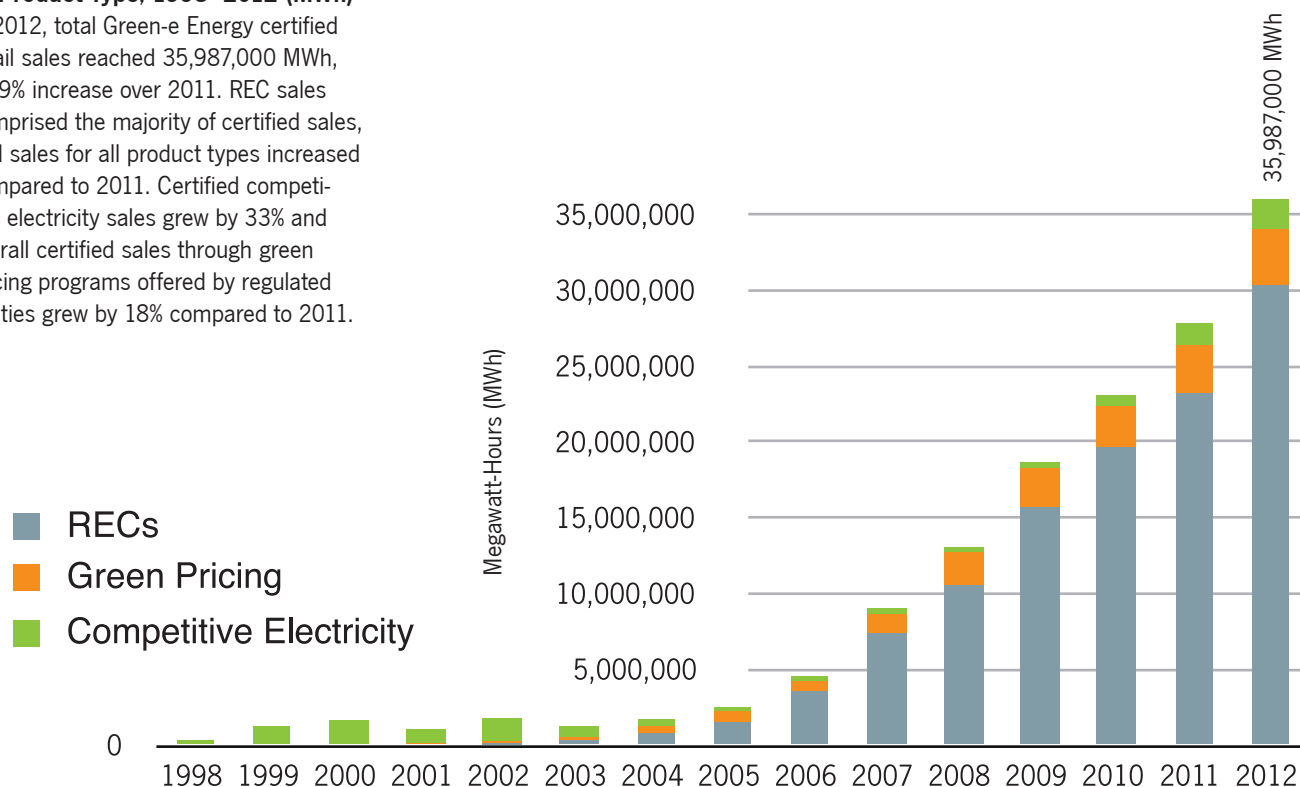


Figure 2



Non-residential entities once again accounted for the vast majority of certified MWh purchased, at over 33 million MWh, up by 31% over 2011. There was also a significant increase of 39% for certified wholesale transactions. 2012 also saw a 16% increase in certified residential sales volume, reaching nearly 2.9 million MWh. Although there are significantly more residential customers that purchase Green-e Energy certified renewable energy, they tend to purchase smaller amounts than non-residential customers.

Figure 3



Of the 670,000 retail customers purchasing certified products in 2012, 378,000 mostly residential customers participated in a certified green pricing program. Competitive electricity programs continued their annual growth rates of over 25% since 2008, with participation growing significantly for residential customers. Residential customers made up the majority of REC purchasers as well, despite more volume going to non-residential customers. Overall, the number of REC purchasers increased by 13% in 2012, and the total number of REC purchasers has increased five-fold since 2008.

Figure 4



Many customers throughout the U.S. have the option to purchase Green-e Energy certified renewable energy through their local utility or electric service provider. In 2012, the number of states with certified, bundled renewable electricity options remained steady at 36. RECs unbundled from electricity are available to buyers regardless of location. Businesses purchasing large MWh volumes tend to purchase unbundled RECs, while residential customers and businesses purchasing smaller volumes tend to purchase a bundled electricity product available through their utility or electric service provider.

Table 1 Total Green-e Energy Certified Sales of Renewable Energy by Product Type and Customer Type, 2012 (MWh, rounded)

	Retail Residential	Retail Commercial	Wholesale
RECs	386,000	29,934,000	15,654,000
Green Pricing	1,920,000	1,770,000	0
Competitive Electricity	574,000	1,404,000	55,000
Total Sales	2,880,000	33,108,000	15,717,000
Total Retail: 35,987,000 MWh Total Unique Certified: 42,533,000 MWh Total Certified Transactions: 51,705,000 MWh			

▲ **The total volume of all Green-e Energy certified transactions in 2012 reached over 51.7 million MWh, a 32% increase from the 2011 total.**

This total represents transactions of all types, including both certified retail sales to electricity end users looking to make a green power use claim, and wholesale

sales to resellers of renewable MWh that did not claim the RECs themselves.

Green-e Energy certified wholesale transactions exceeded 15.7 million MWh in 2012. Of these certified wholesale transactions, nearly 9.2 million MWh were resold in Green-e Energy certified retail transactions. The remaining 6.5 million MWh were sold in non-Green-e Energy certified

transactions to utilities, electric service providers, power marketers, and other buyers in the voluntary market. Removing the instances of renewable MWh certified by Green-e Energy at both the wholesale and retail levels, Green-e Energy certified sales of over 42.5 million unique MWh in 2012, an increase of 25% from 2011.

TABLE 2: TOP 10 STATES BY RETAIL SALES VOLUME (MWh) IN 2012
TEXAS 11% ARIZONA 8% CALIFORNIA 8%
NEW YORK 8% WASHINGTON 8%
MARYLAND 5% MINNESOTA 5%
PENNSYLVANIA 5% ILLINOIS 4% MASSACHUSETTS 4%

▲ **Percent of Total Certified Retail Sales (in MWh) by State, 2012.** Green-e

Energy collects data on the number of retail customers and the MWh of certified products provided to them. Texas remained in the top spot for amount of certified renewable MWh sold to retail customers. This year Arizona customers' commitment to renewable energy is noteworthy, climbing from outside the top 10 to number two. 68% of Green-e Energy certified renewable electricity is delivered to customers located or headquartered in these top 10 states.

► **Retail customers buying Green-e Energy certified renewable energy are spread out throughout the U.S. and Canada.** 70% of retail customers

are located in these top 10 states (a drop from last year), meaning that the geographic distribution of customers is slightly more evenly spread. Texas claimed the top spot in 2012 with its large number of retail customers. There is significant overlap between these two top 10 lists, but the main difference relates to the purchasing habits of retail customers. For instance, although Oregon has a large number of customers, each customer is buying fewer MWh on average than customers in other states.

Table 3 Percent of Total Retail Customers by State, 2012

(Includes REC sales)

Texas	12%
California	11%
Washington	8%
Oregon	7%
New York	6%
Colorado	6%
Utah	5%
Michigan	5%
Wisconsin	5%
Maryland	5%

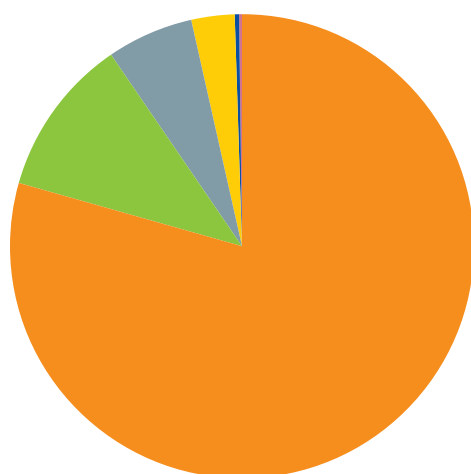


Figure 5
Contributions of Renewable Resource
Types to Total Green-e Energy
Certified Retail Sales, 2012

- Wind (79%)
- Non-Gaseous Biomass (11%) ²
- Low-Impact Hydro (6%)
- Gaseous Biomass (3%)
- Solar (0.3%)
- Geothermal (0.2%)

▲ **The U.S. is abundant with the potential for many different types of renewable resources.** In 2012, the U.S. voluntary market had a diverse, but wind-dominated, resource mix. Nearly half of all installed U.S. wind capacity sells some or all of its output in a certified product.³ Wind facilities represented an even larger percentage of the total supply in 2012 than in 2011. Hydropower facilities saw a decrease as a percentage of the mix for 2012, while solar increased its contribution to the total supply of certified sales by 50%.

► **Around two-thirds of the renewable energy certified by Green-e Energy was sourced from these top 10 states.**

This is primarily related to the high wind content in many certified products, and the high rate of potential for (and installation of) wind facilities in the middle of the country. The difference between states with generators and purchasers of renewable energy demonstrates how the national market for renewable energy certificates is allowing customers with limited access to local renewable energy products to support changes in the national generation portfolio.

Table 4 Top Ten States Supplying Renewable Energy to Green-e Energy Certified Retail Sales by Percent of Total Certified MWh, 2012

Oklahoma	15%
Iowa	14%
Texas	9%
North Dakota	6%
Minnesota	4%
Missouri	4%
Idaho	4%
Montana	4%
Kansas	4%
Wyoming	4%

▼ **Based on National Renewable Energy Laboratory data available at publication, Green-e Energy certified 98% of retail REC sales in the US in 2012.**⁴ Non-residential customers purchasing large volumes of RECs make up the majority of the overall voluntary renewable energy market on a MWh basis,

and this portion of the market has continued to grow. Certified REC purchases by non-residential customers have steadily increased every year, and the number of non-residential customers increased by more than 50% in the past year. The number of residential customers purchasing RECs makes up a small portion of the

market. After a sharp rise in the number of RECs purchased by residential customers in the past few years, the number of residential customers stayed flat and MWh volumes decreased in 2012.

Table 5 Green-e Energy Certified Sales of Renewable Energy Certificates by Customer Type, 2012

	2012 Sales (MWh, rounded)	Percent Change From 2011	Percent of Total Retail REC Sales	Customers	Average Purchase Size (MWh)
Residential	386,000	-24%	1.3%	87,000	4
Non-Residential	29,934,000	31%	98.7%	22,000	1,360
Total Retail	30,320,000	30%	100.0%	109,000	
Wholesale	15,654,000	39%		130	120,420

2. Gaseous Biomass includes landfill gas, wastewater methane, digester gas, biogas, and other biogenic gases. Non-gaseous Biomass includes wood waste, sawmill waste, black liquor, agricultural waste, ethanol, fuel crops, and other resources as described in the *Green-e Energy National Standard*, available at www.green-e.org/energystandard.

3. Based on total U.S. wind power capacity installed in 2012 according to AWEA's *2012 U.S. Wind Industry Annual Market Report*. Available at www.awea.org/Resources/Content.aspx?ItemNumber=5346.

4. Based on preliminary figures from the National Renewable Energy Laboratory (NREL).

Table 6 Green-e Energy Certified Sales in Green Pricing Programs by Customer Type, 2012

	2012 Sales (MWh, rounded)	Percent Change From 2011	Percent of Total Green Pricing Sales	Customers	Average Purchase Size (MWh)
Residential	1,920,000	16%	52%	365,000	5
Non-Residential	1,770,000	20%	48%	13,000	136
Total	3,690,000	18%	100%	378,000	

▲ **In states where the electricity market is regulated, many customers can purchase a bundled renewable electricity product, known as a utility green pricing program, from their local utility.** Utility programs certified by Green-e Energy consistently rank high in the National Renewable Energy Laboratory's Top Ten rankings in terms of customer participation rate, total number of subscribers, and total MWh sold. In 2012, these programs continued the growth shown in 2011, and there are now more Green-e Energy certified MWh sold through green pricing programs than ever before. Although the number of non-residential customers stayed approximately the same in 2012, MWh volumes purchased by these companies and institutions increased 20%.

Table 7 Green-e Energy Certified Sales of Electricity by Electric Service Providers by Customer Type, 2012

	2012 Renewable Sales (MWh, rounded)	Percent Change From 2011	Percent of Total Competitive Electricity Retail Sales	Customers	Average Purchase Size (MWh)
Residential	574,000	81%	21%	133,000	4
Non-Residential	1,404,000	21%	71%	51,000	28
Total Retail	1,978,000	34%	100%	184,000	
Wholesale	55,000	-17%		<10	

▲ **In states where the electricity market has been deregulated, customers have the option to choose their electric service provider.** The market for certified competitive electricity products has increased dramatically for both residential and non-residential customers. In 2012, consumers in deregulated markets purchased 34% more Green-e Energy certified MWh than in 2011, a testament to the massive growth seen overall in deregulated markets since 2009. In 2012 this growth was especially evident among residential customers, with 56% more customers purchasing 81% more certified MWh than in 2011.



Over **300** companies participated in Green-e Energy in 2012, including **70** sellers offering **78** Green-e Energy certified REC products, **233** utility green pricing program participants* offering **31** certified green pricing programs, and **17** competitive electricity suppliers offering **24** certified renewable electricity programs.

3 Phases Renewables
 3Degrees
 AEP Retail Energy LLP
 Alameda Municipal Power
 Alliant Energy
 Ambit Energy, LP
 Ameren Missouri
 Arizona Public Service
 Austin Energy
 BlueStar Energy Services
 Bonneville Environmental Foundation
 Carbon Solutions Group
 Cascade Renewable Energy
 Cincinnati Bell Energy
 Cirro Group, Inc.
 City of Palo Alto Utilities
 Clean Currents
 ClearView Electric Inc.
 Community Energy, Inc.
 Community Green Energy, LLC
 ConEdison Solutions
 Constellation Electric dba BGE Home
 Constellation NewEnergy
 Consumers Energy Company
 Direct Energy
 Dominion Virginia Power
 DTE Energy
 Duke Energy
 EDF Trading
 Element Markets, LLC
 Empire District Electric
 Energy Plus Holdings LLC
 Eugene Water and Electric Board
 Exelon Energy Company
 FirstEnergy Solutions Corp.
 Georgia Power
 Glacial Energy V.I.

Good Energy
 Green Mountain Energy Company
 Green Power EMC
 Greenlight Energy
 Hess Corporation
 Hudson Energy Services
 Iberdrola Renewables, LLC
 ICAP Energy LLC
 Indianapolis Power & Light Company
 Integrys Energy Services, Inc.
 J.P. Morgan Ventures Energy Corporation
 Kansas City Power and Light
 Greater Missouri Operations
 LG&E and KU Energy
 Liberty Power
 Luminant Energy Company, LLC
 Marin Energy Authority
 McKinney LFG, LLC
 NativeEnergy
 New York Power Authority
 Nexant Clean Energy Markets
 NextEra Energy Resources, LLC
 Noble Americas Energy Solutions LLC
 North American Power and Gas, LLC
 NRG Business Solutions
 NSTAR Electric Company
 OneEnergy Renewables
 PacifiCorp
 PEAR, LLC
 Pepco Energy Services
 Platte River Power Authority
 Plymouth Rock Energy
 Powerex Corp
 Public Service Company of Oklahoma
 Puget Sound Energy
 Reliant Energy
 Renewable Choice Energy

Sacramento Municipal Utility District
 Salt River Project
 Santee Cooper
 Seattle City Light
 Silicon Valley Power—City of Santa Clara
 Soltage
 Sterling Planet, Inc.
 Stream Energy
 Suez Energy Resource NA, Inc.
 Tennessee Valley Authority
 TerraPass
 The CarbonNeutral Company
 The Offset Project
 TransAlta
 TransCanada Power Marketing Ltd.
 TXU Energy
 Viking Wind Partners, LLC
 Viridian Energy, Inc.
 Wabash Valley Power Association
 Washington Gas Energy Services
 We Energies
 WPPI Energy
 Xcel Energy

Green-e Program Governance

Green-e Energy and Green-e Climate are governed by the independent Green-e Governance Board. CRS serves as the program administrator. The Board ensures that the program's standards and policies are appropriate and necessary to meet its stated goals and objectives, and that certification and verification are handled in a credible and effective manner. The Board regularly reviews the program's standards in consultation with stakeholders and amends them as necessary so that they remain consistent with changing circumstances and evolve with market conditions.

* Retail distributors not listed

Green-e Climate

As the only independent, third-party certification program for retail carbon offsets sold in the voluntary carbon market, Green-e Climate provides critical consumer-level protections and assurances to retail purchasers, sellers, and project standards and certification programs in the market. The program is intended to strengthen credibility in the voluntary carbon market and thereby promote use of carbon offsets by individuals and companies to reduce their greenhouse gas (GHG) footprints.

2012 was a year of dramatic growth and diversification for sales of Green-e Climate certified offsets. The volume of certified offsets sold increased by more than

47% from 2011 to 324,414 metric tons carbon-dioxide-equivalent (tCO₂e), bringing the cumulative total reduced since the program's inception in 2008 to over 1 million metric tons of carbon dioxide-equivalent reduced. Green-e Climate has averaged double-digit growth annually over this time.

Green-e Climate is an international program. In 2012, the program certified the sale of reductions from 25 different projects located in China, India, Kenya, South Africa, Turkey, and the U.S. The types of projects used in 2012 included wind, solar, and geothermal renewable energy projects; coal mine methane capture and destruction; landfill gas capture and reutilization; energy efficient and

clean cook stoves; and forestry projects. Projects supplying emissions reductions in 2012 for certified offsets had to be registered with one of five endorsed project standards—the Clean Development Mechanism, the Climate Action Reserve, the Gold Standard, CRS's Protocol for Renewable Energy, or the Verified Carbon Standard. Project-level validations and verifications were supported by three of the five endorsed project standards: the Climate Action Reserve (representing 56% of total supply used in 2012), the Verified Carbon Standard (representing 36% of supply), and the Protocol for Renewable Energy (representing 8% of supply).

Buyers of Green-e Climate certified offsets in 2012 were overwhelmingly U.S. businesses buying through individually negotiated contracts, though certified offsets were also sold to individuals, online and through third-party distributors. Buyers were located in 36 states plus Canada, Germany, Finland, and Washington, D.C. Massachusetts, New York, and Ohio had the most buyers, but buyers in the state of Washington bought the most certified offsets in 2012 by a very large margin.

Figure 6

Project Types Used in Green-e Climate Certified Offsets, 2012

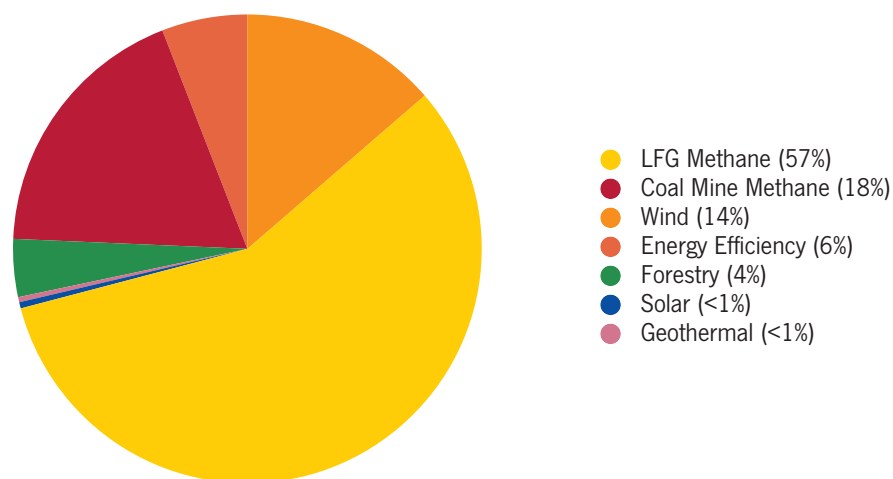


Figure 7

Top 10 Buyer Locations by 2012 Certified Sales

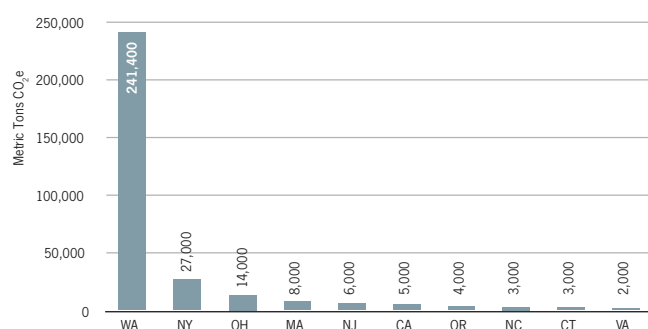
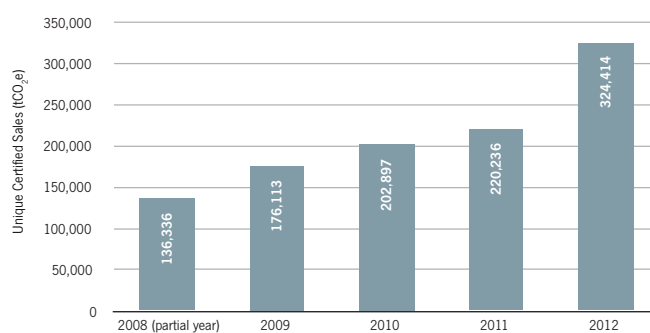


Figure 8

Green-e Climate Program Growth



Green-e Marketplace

Green-e Marketplace recognizes organizations using renewable energy or carbon offsets and enables them to demonstrate their environmental commitment through the use of the nationally recognized Green-e logo. In 2012, Green-e Marketplace welcomed several new participants, including the nationally distributed wine brands of Kendall Jackson, the advertising and branding firm DeBellis & Ferrara, mobile app developer Joliware, and others.

Throughout the year, Green-e Marketplace directed much of its focus to expanding its Green-e re:print initiative (www.green-e.org/reprint), a supply chain program that certifies both printers and paper companies using renewable energy, allowing print customers to lower their printing footprint, support renewable energy, and use the Green-e mark when

sourcing through program participants. 2012 was a very successful year for the program, with Green-e welcoming five new printers into the program—EU Services, Gray Graphics, Harris Lithographics, Hemlock Printers, and Herron Printing and Graphics. 2012 also saw the growth of users of the program, with recognizable names such as Green Mountain Coffee Roasters, Sea World, and UPS all sourcing print materials through the program.

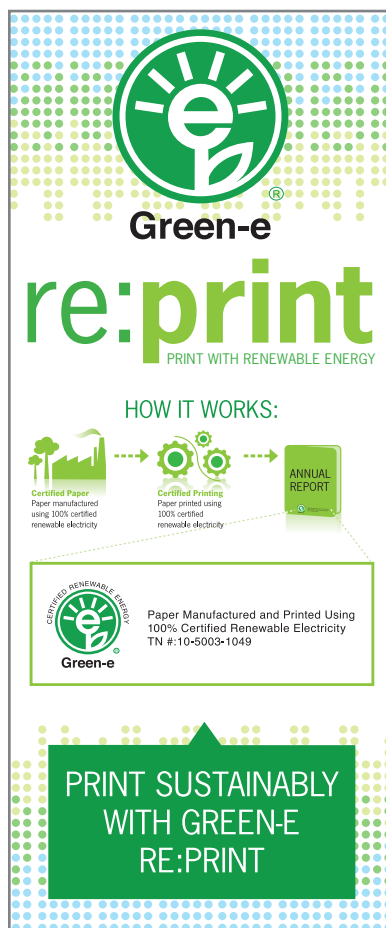
Overall, the total number of Green-e Marketplace companies participating in 2012 dropped slightly to 47. However, many of the existing program participants expanded their use of the Green-e mark by choosing to certify additional products. At the end of 2012, there were over 500 products and companies certified by Green-e Marketplace. •



▲ **Pasta Prima.** Valley Fine Foods buys certified renewable energy certificates and generates on-site renewable energy to offset 100% of the electricity used to manufacture its PastaPrima brand of refrigerated pasta products, available in stores nationwide, including Costco and Safeway.

◀ **Green-e re:print for paper and printers.** Green-e Marketplace administers the re:print program, a supply-chain certification that grants logo use on finished print collateral that uses 100% renewable energy in both the printing and paper.

▼ **Low-impact workout.** Lucy Activewear specializes in activewear for women, including yoga and workout clothing. In 2012 they printed their catalog using Green-e re:print.





Center for Resource Solutions creates policy and market solutions to advance sustainable energy.

Visit us at www.resource-solutions.org