



Center for Resource Solutions

Certified Electricity Products Verification Results

Building consumer confidence in renewable electricity since 1997



Verification Report Year 2002

A report of the results of the annual independent process audit of Electricity Service Providers, Tradable Renewable Certificate Marketers, and Utilities offering Green-e Certified renewable electricity products.

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Green-e is a program administered by the Center for Resource Solutions (CRS). CRS makes it easier for people and organizations to use renewable energy. We design and operate national and international programs that support the increased supply and use of renewable energy resources such as wind, solar, biomass, geothermal and low-impact hydroelectric power.

Executive Summary

2002 Green-e National Verification Results at Glance .

- Verified sales of Green-e renewable energy & Tradable Renewable Certificate (TRC) supply topped 1,926,000 MWh, a two-fold increase over 2001. In aggregate, participating providers exceeded their commitments to their customers in renewable energy product content by 13%.
- Over one in three customers of green power chose a Green-e certified product.
- Over 147,000 households and businesses purchased Green-e certified renewable electricity products representing a 58% market share (MWh) of US green power retail sales.
- Though only representing 6% of the accounts, non-residential customers purchased 23% of total program renewable supply.
- Sixty-three percent of verified renewable supply was from qualifying “new” renewable resources (this includes TRCs as well as electricity products.) The percent of new renewables supplying electricity products is 54%, — a more than two-fold increase over 2001, when the percentage was 26%.
- Green-e certified and verified 32 separate renewable electricity-based products offered by 62 marketers and utilities.
- Green-e certified products resulted in a pollution benefit of 1,181,000 tons of avoided carbon dioxide (CO₂). In addition, the equivalent amount of non-renewable electricity generated in 2002 released 3,268 tons of sulfur dioxide (SO₂) and 2,239 tons of nitrogen oxides (NO_x). These pollution results are two to three times higher than 2001 pollution benefits.

Green-e Program Overview

Green-e is a renewable electricity certification and verification program administered by the non-profit Center for Resource Solutions (CRS). Green-e provides an easy way for consumers to quickly identify environmentally superior electricity products. Renewable electricity products that are certified by the Green-e Program must meet environmental and consumer protection standards that are established through the Green-e and Green Pricing stakeholder advisory process and CRS. The Program also requires that electricity and tradable renewable certificate (TRC) providers disclose information about their product to their customers in a standardized format. This enables consumers to make informed purchasing decisions and helps to build consumer confidence in retail renewable electricity products. Through these efforts and the annual verification process, the Green-e Program is expanding the retail market for renewable electricity products.



Providers of Green-e Certified Products

In 2002, Green-e certified electricity products were sold in California, Texas, Pennsylvania, New Jersey, Connecticut, Maryland, the District of Columbia, Wisconsin, South Carolina, and the Tennessee Valley Authority (TVA) service territory. Nationwide, five electricity retailers, four utilities, and seven TRC marketers participated in the Green-e Program. Four of the seven TRC marketers also sold TRCs in wholesale transactions to other retail providers. In total, 32 separate Green-e certified retail products were offered across the country. Fifteen of the competitive and utility products were offered as 100% of usage from renewable resources, five were offered as 50% renewable, and one utility offering as 25% renewable. TRC products support 100% new renewables and are most commonly sold in blocks with quantities determined by purchasers.

Overview of Green-e National Verification Results

Green-e Competitive, TRC, and Green Pricing program sales totaled over 2 million MWh in 2002¹. Of this total, 1,926,000 MWh (96%) was from eligible renewable resources, which represents a 97% increase in verified renewable supply over 2001. Of this supply 1,214,000 MWh (63%) was from qualifying "new" renewable resources. Total renewables supplied is roughly equivalent to the annual electricity output of 733 utility scale 1 MW wind turbines. Total renewables supplied exceeded that required to meet stated retail product content by over 13%. The percent of new renewables supplying electricity products (i.e. excluding TRC products) was 54%, -- the highest percentage in program history.

The increase in volume and customers served is due to several factors: 1) Green-e certified products in new markets such as the Texas direct access market and the national market for Tradable Renewable Certificates (TRCs); and 2) Green-e sales volume increased in direct access markets in California and the Mid-Atlantic, and in monopoly utility green pricing markets.

Table 1 summarizes the total renewable energy supply and *new* renewable supply, by resource type, for Green-e certified electricity sales in 2002.

TABLE 1: Total Renewable Resource Supply for Green-e Products in 2002

Resource	Total Renewables MWh	New Renewables MWh
Wind	922,000 (48%)	922,000 (76%)
Geothermal	637,000 (33%)	-
Biomass	316,000 (16%)	285,000 (24%)
Small & Low Impact Hydro	50,000 (3%)	-
Solar	1,100 (<1%)	1,040 (<1%)
Total²	1,926,000 (100%)	1,208,000 (100%)

¹ Of these sales, 73,000 MWh are wholesale transactions of which 94% are non-Green-e certified retailers and utilities.

² Figures are approximate due to rounding.

In 2002, over 147,000 customers³ purchased Green-e certified renewable electricity products. Roughly 138,000 (94%) were residential accounts and just fewer than 9,000 (6%) were non-residential accounts. However, non-residential accounts represented 23% of program renewable energy demand. The number of accounts served also grew substantially in 2002, representing a 23% increase from 2001. In 2002, over 1 in 3 green power customers in the U.S. chose a Green-e certified product. These customers represented 58% of total U.S. sales (MWh) of retail renewable electricity in 2002.⁴

Table 2 summarizes the number of customers and MWh of customer demand for each Green-e market type (competitive markets, TRCs, and utility).

TABLE 2: Green-e Customers & Load Served by Each Certified Product Type

Type of Green-e Product	# Residential Customers	Residential Load (MWh)	# Non-Residential Customers	Non-Residential Load (MWh)	Wholesale Sales (MWh)
Competitive Electricity	118,000	1,135,000	8,000	301,000	-
TRC	2,000	8,600	187	68,000	73,000
Utility Green Pricing	18,700	114,000	678	18,000	-
Subtotals	138,000	1,257,000	9,000	387,000	73,000
Grand Totals					
Total Number of Customers	147,000				
Total Sales⁵ (MWh)	1,718,000				

In 2002, nearly 125,000 (86%) Green-e product customers in 2002 purchased their power in competitive electricity markets. Certification of products in competitive electricity markets began in 1997 and is the longest running branch of the Green-e program. The second largest Green-e program is Green Pricing, a certification program launched in 1999 and serving over 19,000 (13%) customers in 2002. The TRC Program was launched in April of 2002 and served over 2200 (1%) customers in its first eight months, but represents the second highest total load served as a result of large non-residential and wholesale transactions.

³ The data in this report represents the number of customers at the end of 2002. In this report the term customers is interchangeable with electricity accounts.

⁴ Sales and customer data based on Green-e verification data and *Green Power Marketing in the United States: A Status Report*, National Renewable Energy Laboratory, 2003.

⁵ Because providers of Green-e products delivered 13% more renewable energy resources than required to satisfy their stated product content, the sales total (1,718,000 MWh) is lower than the total verified renewable supply figure (1,926,000 MWh.)



Green-e Program

Renewable Energy Certification

Renewable Electricity Product Classes

The Green-e program certifies three classes of renewable electricity products:

1. Renewable electricity products offered in competitive electricity markets;
2. Tradable Renewable Certificate products offered nationwide; and
3. Renewable electricity products offered by utilities in electricity markets not open to retail competition.

In all three of these product classes, Green-e certifies and verifies products offered to residential and business customers. Green-e also offers certification of wholesale transactions.

Information Verified by the Green-e Process Audit

The Green-e verification required each company offering Green-e certified products to undergo an independent process audit. The Green-e process audit is different from a traditional financial audit in that the auditor only reviews those materials and processes dictated by a set of *Agreed-Upon Procedures* provided by CRS. The auditor reviews a company's generation meter data, contracts, invoices and customer data to verify the quantity and type of renewable power generated, purchased and sold. More specifically, the independent auditor annually verifies that the participating companies have contracts and processes that support the following Green-e requirements:

- Renewable power or TRCs were acquired from eligible resources, in quantity and type, to meet customer demand for each specific Green-e electricity product offering;
- Any non-renewable portion of the electricity product had emissions less than or equal to the regional system power mix for SO_x, NO_x and CO₂;
- The information in the Annual Power Content Label was accurately calculated and displayed prospectively and historically to customers;
- The renewable power or TRCs purchased and sold were not sold to more than one customer or subsidized through the rate base of regulated utilities;
- The companies with certified products did not make any specific purchases of nuclear power for the certified product;
- The process for recording the amount of power or TRCs sold to customers is accurate based on a statistical sampling of customer bills;
- As required by the Green-e standards, the companies with certified products purchased sufficient quantities of new renewable resources; and
- In California, the Annual Retail Supplier Report forms filed with the California Energy Commission (CEC) are accurate and supported by contracts and/or invoices for power purchased and sold.

In addition, there are product and region-specific criteria that are verified through the process audit. Details of these procedures are included in the Green-e process audit protocols, which can be reviewed on the CRS website.

Additional Steps to Assure Product Quality

In addition to annual verification, Green-e conducts a bi-annual Marketing Compliance Review of each Green-e certified retail product to ensure that the Electricity Service Providers (ESPs), TRC marketers, and utilities are abiding by the Green-e Code of Conduct. The Green-e Code of Conduct governs marketing claims, the use of the Green-e logo and customer disclosure requirements.

During the Marketing Compliance Review, staff confirm that the providers of Green-e certified products are not making false or misleading statements about their product and that they have made pricing, power, and contract disclosures to customers in a standardized format.

The *Green-e Customer Disclosure Requirements* outline Green-e Program requirements with regards to Marketing Compliance Review, consumer information disclosure, and logo use and language.

Verification Results for Green-e Certified Competitive Electricity Products

Competitive Electricity Providers and Products

Five electric service providers completed the verification audit for sales during calendar year 2002 for 14 products offered in California, Texas, Connecticut, New Jersey, Pennsylvania, Maryland, and the District of Columbia.

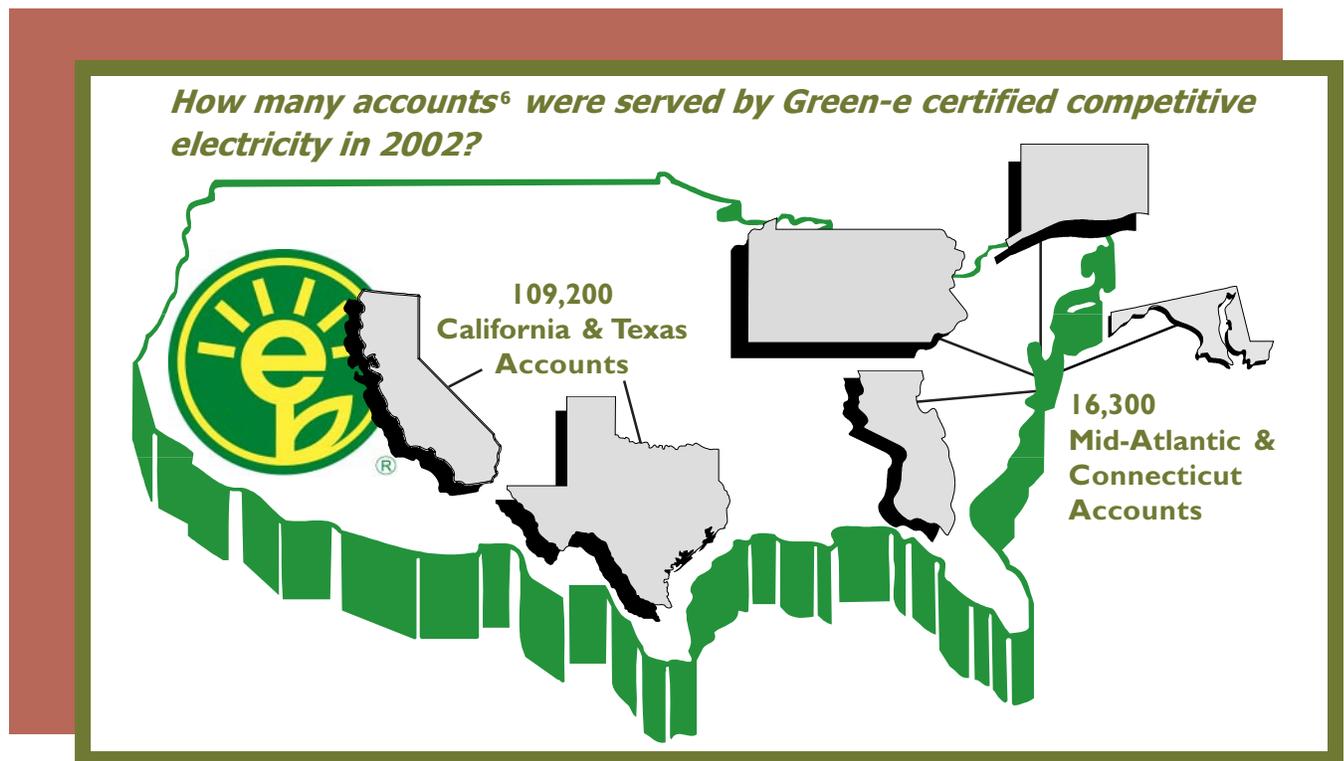
1. Green Mountain Energy Company offered electricity service to residential and commercial customers in California, Texas, Connecticut, New Jersey, and Pennsylvania.
2. Mack Services and Energy Cooperative of Pennsylvania offered electricity service to residential and commercial customers in Pennsylvania.
3. Pepco Energy Services offered electricity service to commercial customers in Maryland and the District of Columbia.
4. Sacramento Municipal Utility District (SMUD) offered electricity service to residential and commercial customers in California
5. Commonwealth Energy offered electricity service to residential and commercial customers in California.

Nine products contained 100% renewable resources and five contained 50% renewable content.

Green-e Competitive Electricity Sales and Customers

The total load served by Green-e competitive electricity products in 2002 was approximately 1,436,000 MWh, a 51% increase in volume over 2001. Suppliers exceeded their commitments to customers by procuring over 1,480,000 MWh of renewable resources. Seventy-nine percent of this load was sold to residential accounts and 21% to non-residential accounts, a similar proportion to last year. In 2002, nearly 126,000 electricity customers chose Green-e certified electricity. Green-e certified electricity was delivered to nearly 118,000 (95%) residential accounts and nearly 8,000 (5%) non-residential accounts. Green-e product suppliers exceeded their commitments to their customers by procuring or generating more renewable energy than needed to meet their stated product content, a benefit to consumers, the environment, and the marketers.

The average residential customer of certified competitive market products, purchased 760 kWh of renewable energy per month in 2002. Of these purchases, 410 kWh per month were from new renewables. The average non-residential customer purchased 3,150 kWh of renewable energy per month in 2002.



Residential Customers

In California and Texas, over 109,000 residential accounts were served Green-e certified electricity in 2002 with a purchased load of 993,000 MWh. In Pennsylvania, New Jersey, and Connecticut over 16,000 residential customers bought Green-e certified power with a purchased load of 142,000 MWh.

⁶ CRS policy is to present sales data in aggregate so as not to disclosure specific sales information on any one company. Hence, state results are grouped together to protect information on sales in states with a single Green-e product.

Commercial Customers

While non-residential customers in the Mid-Atlantic and Connecticut represented less than 1% of the accounts in this region, they represented 25% of the regional demand for Green-e products, further demonstrating the strong role commercial and industrial purchasers play in building demand for renewable electricity. In the Mid-Atlantic⁷ and Connecticut, there were 211 non-residential accounts with a load of 47,300 MWh. Approximately 7,700 non-residential California accounts (industrial, small and large commercial and agricultural) were served by Green-e certified power with a load of 211,250 MWh.

Green-e and Green Power Choice

In California, Green-e products represented 100% of the green power accounts. In Texas, over 60% of green power customers chose Green-e certified electricity. In Pennsylvania, 85% of green power customers chose Green-e certified electricity, and in New Jersey and Connecticut 100% of green power customers chose Green-e certified electricity.

Update on the California Energy Market

Green-e Program sales were significantly impacted by the repeal of direct access in California during 2001, and declined 39% that year from 2000 levels. Several Green-e marketers were forced by market and regulatory actions to reduce or completely stop serving Green-e customers in the state. Regulatory actions in the fall of 2001 prohibited direct access marketers from signing up new customers. Green-e sales in California during 2002 declined a further 10%. California sales in 2002 are attributable to several retail electricity providers retaining their direct access customers and continuing to provide Green-e certified products through 2002, and to the Green-e certified products offered by Sacramento Municipal Utility District. Green-e certified offerings represented 100% of the direct access residential market in the state at the end of 2002, and 34% of the non-residential direct access accounts.

Types of Renewable Electricity Supply

Of energy bought to supply Green-e certified electricity products in 2002, 94% of that energy was generated from eligible renewable resources, amounting to over 1,480,000 MWh of renewable generation. In all regions, the renewable energy content substantially exceeded Green-e's minimum requirements.

⁷ In the Mid-Atlantic Green-e products were sold to customers in Pennsylvania, New Jersey, Maryland, and the District of Columbia.

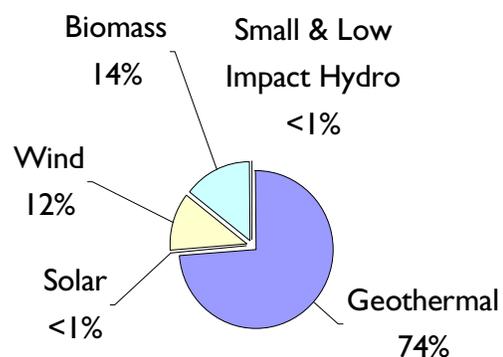
TABLE 3: Resource Supply Mix for Green-e Competitive Electricity Products in 2002

Resource	Renewables Purchased or Generated (MWh)	% of Total Electricity Purchased or Generated (MWh)
Eligible Renewable Resources	1,480,000	94%
Geothermal	637,000	41%
Wind	549,000	35%
Biomass	246,000	16%
Small & Low Impact Hydro	48,000	3%
Solar	470	<1%
Non-Renewable Resources	87,000	6%
Large Hydro	33,000	2%
Natural Gas	25,000	2%
Municipal Solid Waste ⁸	29,000	2%

California Resource Mix for Green-e Retail Products in 2002

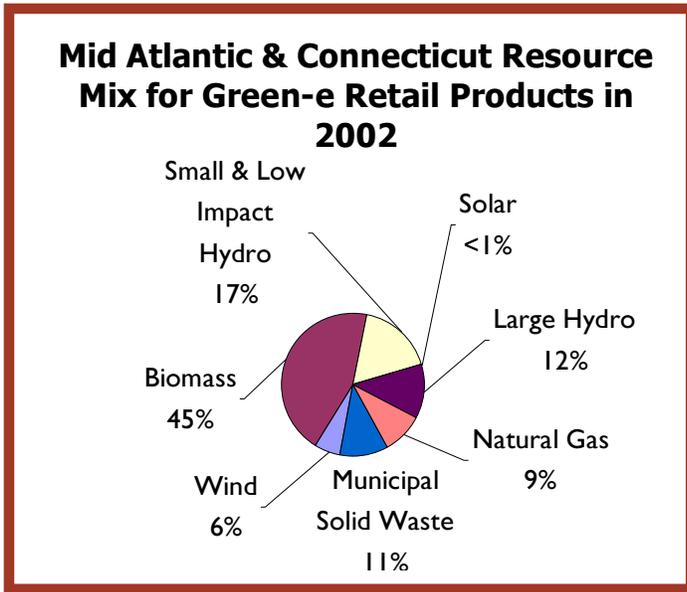
In California, 100% of the energy sold through Green-e certified products came from eligible renewable energy resources. Due to over purchasing, renewables supplied exceeded stated product content by 12%. For California, 74% of the energy sold as Green-e was from geothermal facilities, 12% from wind, 14% from biomass facilities, less than 1% from small hydro, and less than 1% from solar. In California, there were 4 Green-e products sold. Three claimed 100% renewable energy content, and one claimed 50% renewable energy content. This 50% product actually delivered 100% renewable energy content.

California Resource Mix for Green-e Retail Products in 2002



⁸ Municipal solid waste is excluded from eligible renewable resources serving Green-e products in the Mid-Atlantic. Products must contain a minimum of 50% eligible renewable resources. Any non-renewable portion of the product must have an emission profile cleaner than the average system power mix.

Mid-Atlantic & Connecticut Resource Mix for Green-e Retail Products in 2002



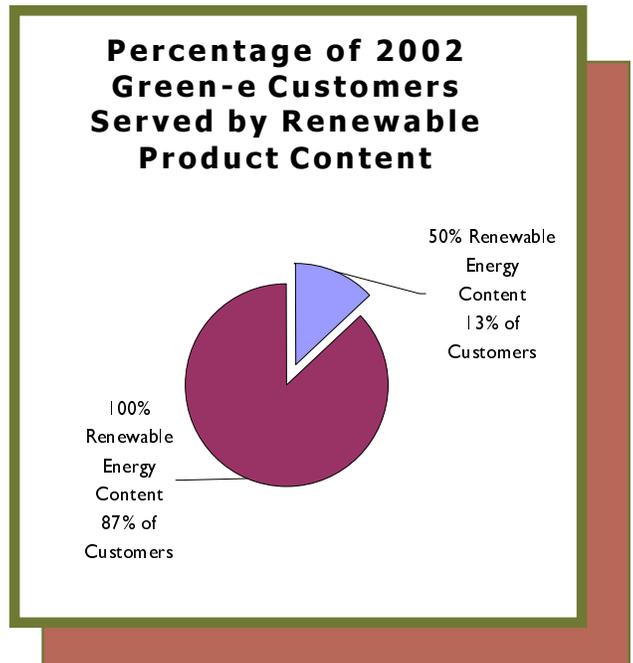
In the Mid-Atlantic and Connecticut, 79% of the total energy purchased to supply Green-e products came from eligible renewable resources. Due to over purchasing, renewable supply exceeded stated renewable product content. Overall, Green-e products in the Mid-Atlantic region and Connecticut contained 45% biomass, 6% wind energy, 17% small and low-impact hydro, less than 1% solar, and the remainder from non-renewable resources with a emissions profile cleaner than average system power. There were eight Green-e products sold. Five claimed 100% renewable energy content, and the remaining three claimed 50% renewable energy content.

The Green-e certified product offered in Texas in 2002 contained 100% new Texas wind.

Renewable Content Mix

ESPs went beyond their commitment to customers in offering renewable power. Nationwide, 64% of all of the competitive Green-e products sold exceeded Green-e's minimum requirements for renewable energy product content. These results show that in aggregate ESPs have delivered more green power to the grid than required – a benefit for consumers, renewable power producers and the environment. This finding follows the 2001, 2000, 1999 and 1998 Green-eVerification Results that also documented that Green-e certified products either met or exceeded the program's minimum requirements for renewable energy product content.

The figure on the right shows the percentage of customers that purchased 100% renewable products versus customers who chose products based on less than 100% renewables. Of the over 125,000 customers purchasing Green-e electricity products in 2002, over 87% chose 100% renewable content products. In Texas, 100% of customers chose products with 100% renewable energy content, in California 89% chose products with 100% renewable energy content, and in the Mid-Atlantic and Connecticut 53% of customers chose products with 100% renewable energy content.



New Renewables

The Green-e new renewables standard requires that certified products contain a specified percentage of new renewable resources. In California and the Mid-Atlantic, “new renewables” are generated from wind, solar, geothermal or biomass facilities that have come on line since 1997; in Connecticut, since 1998; and in Texas, since September 1, 1999. The percentage of new renewables required in product content increases over time. In 2002, 50% new renewable content was required in Texas, 10% was required in California, Pennsylvania, New Jersey and Connecticut, and 5% was required in Maryland and the District of Columbia.

Fifty-four percent of the energy sold under the Green-e logo in competitive markets nationwide was derived from new renewable resources. This represents a 250% increase in new renewables used to supply Green-e electricity products, up from 21% in 2001. In California, 29% of the energy sold under the Green-e label was from new renewable resources. The new renewable resources used in California Green-e products were biomass (55%), wind (45%), and solar (<1%). In the Mid-Atlantic and Connecticut, 51% of total energy sold was from new renewables. In this region the new renewable resources came from biomass (87%), wind (13%), and solar (<1%). In Texas, 100% of the renewable resources sold came from new wind energy.

The addition of a 100% new renewable electricity product in Texas accounted for some of the increase in new renewable content. The biggest percentage increase of new renewables supply occurred, surprisingly, in the Mid Atlantic and Connecticut where new renewables totaled 119,000 MWh (51% of supply) in 2002, a 340% increase over 2001. New renewable supply increased in California to 228,000 MWh (29% of supply) in 2002, a 32% increase over 2001. The increasing role of new renewables in Green-e products is strong evidence of the program achieving one of its primary missions: to increase demand for new renewables.

Competitive Electricity Products Environmental Benefit⁹

Competitive electricity retail products sold in 2002 resulted in a pollution benefit of 842,033 tons of avoided carbon dioxide (CO₂), a major contributor to global warming. In addition, the equivalent amount of non-renewable electricity generated in 2002 released 1,995 tons of sulfur dioxide (SO₂), a precursor of acid rain, and 1,478 tons of nitrogen oxides (NO_x), which contributes to smog and is a green house gas. Aggregate pollution benefits of the entire Green-e Program are discussed later in this document.



⁹ All emissions data is from the EPA EGRID 2002 Version 2.1

Verification Results for Green-e Certified Tradable Renewable Certificate Products

TRC Providers and Products

Seven TRC providers completed the verification audit for sales during calendar year 2002 for 11 TRC products.¹⁰

1. Bonneville Environmental Foundation offered predominantly wind certificates to residential, commercial and wholesale customers. Solar was included in some mixes.
2. Community Energy Inc. offered wind certificates to residential, commercial and wholesale customers.
3. Sterling Planet offered wind, biomass, and solar certificates to residential and commercial customers.
4. Renewable Choice Energy offered wind certificates to residential and commercial customers.
5. Aquila offered wind certificates to commercial and wholesale customers.
6. Sun Power Electric offered predominantly biomass certificates with some solar to residential and commercial customers.
7. 3 Phases Energy offered wind certificates to residential and commercial customers.

All TRC retailers accepted customers from any location in the U.S. Four of the TRC retailers made product claims based on sourcing TRCs exclusively from one region. Three retailers made product claims based on nationally sourced TRC resources. Green-e certified TRCs can be generated anywhere in North America and sold to any customer location.

Customers and Customer Sales

Nationwide, over 2200 retail customers purchased Green-e certified TRCs in 2002, the first year that certified products were available. Total sales were nearly 150,000 MWh of certificates representing 100% new renewable generation. The majority of customers were residential, but 94% of the demand was from non-residential and wholesale buyers.

TABLE 4: Customer Sales of Green-e TRC Products in 2002

Type of Customer	Number of Customers	Load (MWh)	% Of Load (MWh)
Residential	2,026	8,600	6%
Non-Residential	187	68,000	45%
Wholesale	18	73,000	49%
Total	2,231	150,000	100%

¹⁰ One TRC retailer received certification late in 2002 and had sales totaling less than 1% of total Green-e Program sales. This retailer submitted unaudited sales and supply information with permission of CRS. Their 2002 sales will be audited in the 2003 audit.

Residential Customers

Approximately 2,000 residential customers purchased TRCs in 2002, with a total demand of 8,600 MWh. Residential customers represented 91% of the customers, and 6% of the demand (MWh) for TRCs.

Non-residential Customers

One hundred and eighty-seven non-residential customers purchased Green-e certified TRCs (8% of total), accounting for 45% of TRC demand.

Wholesale Customers

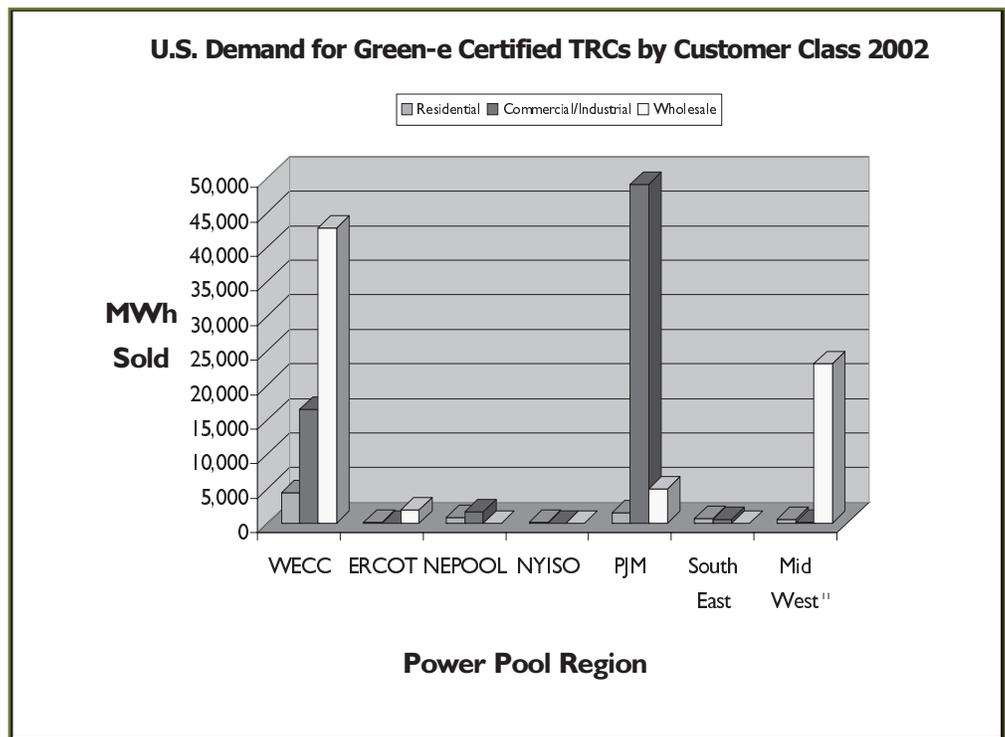
Eighteen utilities, ESPs, and TRC brokers purchased 49% of Green-e TRC supply for further resale. The large majority (94%) of this supply was later resold by monopoly utilities and competitive ESPs in non-Green-e certified transactions through retail green power programs.

Location of Customer Sales

TRC customer's sales were located in the following regions: the Western States (WECC) 43%, the Mid-Atlantic (PJM) 37%, the Midwest 16%, and New England (NEPOOL) 2%. The Southeast, Texas, and New York accounted for the remaining 2% of TRC demand. The WECC accounted for over 50% of residential customers and residential demand. The Mid-Atlantic accounted for 19% of residential customers, and New England had 17% of residential customers.

The Western States and Mid-Atlantic dominated non-residential TRC demand. The Western States accounted for 62% of the customers and 24% of demand. The Mid-Atlantic accounted for 26% of the customers and 72% of demand.

Certified TRC wholesale transactions occurred in all regions except New York, New England, and the Southeast. The areas of wholesale demand were: WECC (59%), Midwest (32%), PJM (7%), and ERCOT (3%). The majority of wholesale Green-e certified transactions were in the WECC to supply monopoly utilities.



¹¹ In this reference Midwest includes the NERC regions of MAPP, MAIN, ECAR, and SPP.

Quantity and Types of TRC Supply

Over 367,000 MWh of new renewable electricity was delivered to grids across the U.S. to supply the Green-e market for TRCs. Wind power was the dominant source of renewable electricity generation used for TRC sales at 99% of the total supply.

Biomass¹² supplied 1% of the TRC supply and solar was less than 1% of the supply.

TABLE 5: 2002 Resource Supply Mix for Green-e TRC Products

New Renewable Resource	TRC Supply (MWh)	% of Supply
Wind	362,030	99%
Biomass	4,750	1%
Solar	240	<1%
Total	367,000	100%

Location of TRC Supply

Three primary regions supplied TRCs for Green-e products in 2002: SPP (65%), WECC (18%), and PJM (15%). Details of the MWh of Green-e certified TRC supply by region in which the generator was located are found below in Table 6.

TABLE 6: Geographic Source of 2002 Green-e TRC Supply

NERC Region	Renewable Certificates Supplied (MWh)	% of Supply
SPP (OK & KS)	239,400	65%
WECC (Western States)	66,000	18%
PJM (Mid-Atlantic)	55,000	15%
NEPOOL (New England)	3,400	1%
FRCC & SERC (Southeast)	1,500	<1%
MAPP & MAIN (Midwest)	1,200	<1%
ERCOT (Texas)	500	<1%
Totals	367,000	100%

¹² The only type of eligible biomass reported was land fill gas.

TRC Product Content

TRCs are sold in a variety of product structures. Most TRCs are offered in fixed blocks of either 150 kWh per month, 100 kWh per month with a 2 block per month minimum purchase, or 2,000 kWh blocks. Green-e requires that TRCs be sold in quantities at least equal to 150 kWh per month or 25% of the customer's usage. Some TRC marketers offered TRCs to match a percentage of the customer's electricity usage at 25%, 50%, 75%, and 100%.

The most popular TRC products among residential customers were block products in the 150-200 kWh per month category. These were purchased by over 65% of customers. The next most popular were the 2,000 kWh TRC block products, purchased by over 20% of customers. These larger blocks enabled marketers to meet the Green-e minimum 150 kWh per month purchase requirement for a whole calendar year in one purchase. The remainder of customers chose a product with a percentage of usage option.

The average residential TRC customer purchased 360 kWh of new renewable certificates per month in 2002, more than twice the minimum Green-e requirement. The average non-residential customer purchased over 30,000 kWh of new renewable certificates per month in 2002.

TRC Products Environmental Benefit¹³

TRC retail products sold in 2002 resulted in a pollution benefit of 277,047 tons of avoided carbon dioxide (CO₂), a major contributor to global warming. In addition, the equivalent amount of non-renewable electricity generated in 2002 released 950 tons of sulfur dioxide (SO₂), a precursor of acid rain, and 625 tons of nitrogen oxides (NO_x), which contributes to smog and is a greenhouse gas. Aggregate pollution benefits of the entire Green-e Program are discussed later in this document

¹³ All emissions data is from the EPA EGRID 2002 Version 2.1

Verification Results for Green-e Green Pricing Utility Accreditation Program

Green Pricing Providers and Products

Four utilities completed the verification audit for sales during calendar year 2002 for seven different products.

1. Santee Cooper offered a 100kWh block product of new renewables to residential and non-residential customers.
2. TVA offered a 150 kWh block product of new renewables to both residential and nonresidential customers through 47 of its affiliated distributors.
3. We Energies offered percent-of-use products to residential and nonresidential customers, and also offered a block product to commercial customers. The three percent-of-use products contained 25%, 50% and 100% renewables. Over 99% of the MWh sales of the We Energies program were attributable to the percent-of-use products.
4. Wisconsin Public Service offered a 100kWh block product of new renewables to residential and non-residential customers.

Green Pricing Customers and Customer Sales

In 2002, there were over 19,000 customers purchasing Green Pricing Accredited products, a 27% increase from year 2001. Ninety-seven percent of the customers in these programs were residential customers. Total sales to Green Pricing customers in 2002 were over 132,000 MWh, a 24% increase over 2001, with residential customers representing 86% of the total MWh sold in the utility programs.

TABLE 7: Green-e Accredited Green Pricing 2002 Customers by Customer Class

Customers	Total Customers
Residential Customers	18,730 (97%)
Non-Residential Customers	678 (3%)
Total	19,408

TABLE 8: Green-e Accredited Green Pricing 2002 Sales by Customer Class

Total Sales	MWh
Residential Customers	113,707 (86%)
Non-Residential Customers	18,333 (14%)
Total	132,040

The Green Pricing Accreditation Program differs from the competitive electricity market Green-e program in a number of respects. One of the chief differences is the Green Pricing Accreditation program's criteria for eligible renewable generation only allow new renewables to be counted towards the required renewable energy content of products. These criteria are intended to encourage utilities to develop new sources of renewable generation and to avoid double-charging customers for renewable energy that has already been included in the electricity rate. For TVA, new generation is defined as generation from facilities installed on or after January 1, 2000, for Wisconsin, new generation is defined as generation from facilities installed on or after January 1, 1998, and for South Carolina, the date that defines new generation is January 1, 2001. Because of the emphasis on developing new resources, the Green Pricing Program may also allow utilities a grace period to true up total supply to total sales. This true up period varies by region.

The average Green Pricing residential customer purchased 500 kWh per month through the utility programs, of which 230 kWh/month was from eligible renewable resources. The average non-residential customer purchased 2,250 kWh/month, of which over 2,170 kWh/month was from eligible renewable energy.

Sales as Percentage of Market and Customer Base

The four utilities averaged about a one percent participation in their green pricing program as measured as a percentage of the number of meters served by the utility. This falls within the national average for utility green pricing programs. In addition, these verification results reveal that two of the four Green-e certified utility products are on the NREL Top Ten list for sales volume and number of participants.

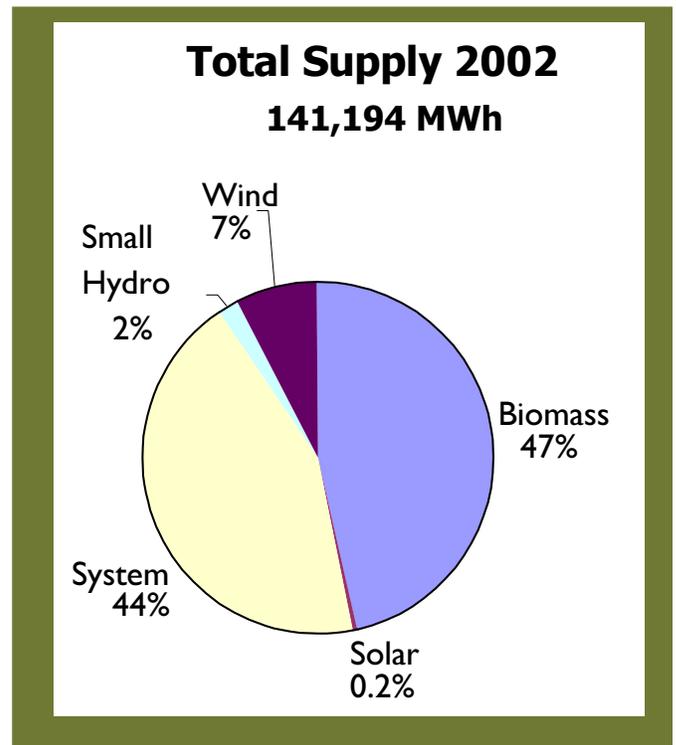
Types of Renewable Electricity Supply

During calendar year 2002, over 140,000 MWh of supply was attributable to Accredited Green Pricing Programs' sales, including MWh allocated to the true-up period.¹⁴ Of this total, 63,250 MWh was from new eligible renewable generation. Total renewables purchased or generated on behalf of these programs was 79,200 MWh, including new and existing renewable generators. In total, renewable energy purchased or generated exceeded program renewable requirements by roughly 9,000 MWh.

Generation from biomass (including landfill gas and waste water methane), represented 47% of the average product content, while generation from wind, small hydro and solar represented 7%, 2%, and less than 0.5% of overall product content, respectively.

Product Content

Product content varied between each of the participating utilities. The table below summarizes the product content for each of the utilities offering renewable energy block products.



¹⁴ In certain regional Green Pricing Accreditation Program criteria, utilities are allowed to true-up short falls in supplies in the next calendar year

**TABLE 9: Green-e Accredited Green Pricing Block Products
Percent of Product Content by Resource Type 2002**

Accredited Utility	Biomass	Solar	Wind
TVA	85%	1%	14%
Wisconsin Public Service	50%	0%	50%
Santee Cooper	100%	0%	0%

We Energies offers percentage of use products, which provide customers with either 25%, 50% or 100% of the customer's load with renewable energy. The renewable portion of the We Energies offering was composed of 75% biomass, 17% wind, and 8% small hydro.

The most popular products among residential customers were the We Energies 25% and 50% blend and the TVA block product. The most popular products among nonresidential customers were the Santee Cooper block product and the TVA block product.

Green Pricing Products Environmental Benefit¹⁵

Green Pricing retail products sold in 2002 resulted in a pollution benefit of 61,450 tons of avoided carbon dioxide (CO₂), a major contributor to global warming. In addition, the equivalent amount of non-renewable electricity generated in 2002 released 320 tons of sulfur dioxide (SO₂), a precursor of acid rain, and 135 tons of nitrogen oxides (NO_x), which contributes to smog and is a green house gas. Aggregate pollution benefits of the entire Green-e Program are discussed in a later section.

National Green-e Program Environmental Benefits

Nationwide, Green-e certified products sold in 2002 resulted in a pollution benefit of 1,181,000 tons of avoided carbon dioxide (CO₂), a major contributor to global warming. In addition, the equivalent amount of non-renewable electricity generated in 2002 released 3,268 tons of sulfur dioxide (SO₂), a precursor of acid rain, and 2,239 tons of nitrogen oxides (NO_x), which causes smog.

TABLE 10: National Environmental Benefits and Comparisons of Green-e Product Sales 2002

Emission	Pollution Benefit (Tons)
CO ₂	1,181,000
Pollution Comparisons to Non-Renewable Generation	
SO ₂	3,268
NO _x	2,239

¹⁵ All emissions data is from the EPA EGRID 2002 Version 2.1

The CO₂ benefits are more than 300% higher than 2001, SO₂ results are over 200% higher than 2001, and NO_x results are almost 400% higher than 2001.

Carbon Dioxide Emissions Benefits

Most of the CO₂ emissions benefits resulted from resources generated in the Western States (WECC), reflective of the fact that most of the energy sold under the Green-e label was generated in the West and sold in California. WECC-supplied renewables accounted for nearly 472,000 tons of CO₂ emission benefits. The next three biggest supply regions responsible for CO₂ benefits are: Texas (ERCOT) at 304,000 tons, Kansas & Oklahoma (SPP) at 209,000 tons, and the Mid-Atlantic (PJM) at 128,000 tons of carbon dioxide emissions benefits. The Southeast (SERC) and Midwest (MAIN) accounted for 79,000 tons of CO₂ benefits.

Sulfur Dioxide Emissions Comparison

Sulfur dioxide emissions comparisons to non-renewables were proportionately higher in areas with much higher regional emissions rates of SO₂. The PJM, SPP, and ERCOT renewable supply represented two-thirds of the SO₂ emissions calculations, despite these regions representing only one-third of the total Green-e MWh of renewable supply sold nationally. This is due to the large amount of coal-fired generation in the PJM, SPP, and ERCOT region.

Nitrogen Oxides Emissions Comparison

Finally, NO_x emissions comparisons to non-renewables were more evenly distributed across all supply regions. One exception is the SPP region responsible for 22% of NO_x emissions benefits while supplying 12% of the renewables used for Green-e products.

Future Program Outlook

The Green-e Program continued to grow in all three market areas in 2003. At the time of publication Green-e certifies 60 products offered by 98 marketers and utilities.

Competitive Electricity

In 2003, Green-e continued to certify a majority of competitive retail renewable electricity products. Green-e added 20 new certified electricity products in 2003 in New York and New England and one certified wholesale product in Ohio. One factor driving this expansion was the trend of distribution utility companies throughout the Northeast offering all of their customers “green check-off” programs. These programs will soon be available in New Jersey, Rhode Island, Connecticut, and possibly other states.



Tradable Renewable Certificates

After an initial group of 7 TRC providers offered Green-e certified products in 2002, the TRC program grew significantly in 2003. At press 18 of 21 companies selling TRCs in the U.S. market offer Green-e certified TRCs. As predicted by many, certified TRC product sales have seen most growth in the corporate and government sector. Certified wholesale TRCs will likely see additional demand as utilities in both regulated and deregulated markets increase utilization of TRCs in their portfolio procurement and retail green power options.

Monopoly Utility Green Pricing

The year 2003 marked innovative partnerships between utilities and renewable energy and TRC suppliers. This included the “check-off” model mentioned above, as well as the use of outsourcing by utilities for supply and marketing of green pricing programs. The TRC marketer 3 Phases partnered with City of Palo Alto Utilities to offer a popular Green-e certified green pricing option to customers of that municipal utility. The non-profit Advanced Energy worked with utilities throughout North Carolina to offer two products to a number of utilities. The products are being launched at the end of 2003 and may become Green-e certified.

For Further Information

The Green-e Program is the only national certification program for renewable electricity and TRC products. For more information about competitive electricity and TRC markets and products, and for a copy of this report, please visit the Green-e website at www.green-e.org. More information on the Green Pricing Accreditation program can be found on the CRS website, www.resource-solutions.org. For other Green-e questions or comments, please call our toll free number at 1 (888) 63-GREEN or contact the Center for Resource Solutions at (415) 561-2100.

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