

# How Voluntary Markets for Renewable Energy Support Meaningful Reductions in GHG Emissions

November 30, 2006

Voluntary renewable energy<sup>1</sup> purchasing is an effective way to offset greenhouse gas emissions. Purchasing renewable energy is one of the most widely available and most cost effective and meaningful ways that individuals and organizations can reduce their environmental footprint. Every customer can buy renewable energy certificates (RECs) and about half of all customers have access to a renewable energy product from their electricity provider. However, there is some confusion among policymakers and other stakeholders regarding the greenhouse gas emissions reductions benefits that result from purchasing renewable energy. This paper, authored by a group of utilities and renewable energy marketers that offer one or more Green-e certified® renewable energy products (listed in Appendix E), addresses those common misperceptions in a series of questions, each followed by key facts and analysis.

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<sup>1</sup> Renewable energy as discussed in this document includes solar, wind, geothermal, and certain types of biomass and hydropower. The Green-e Programs’ definition of renewable energy includes those resources and can be found at [www.green-e.org](http://www.green-e.org). According to the National Association of Attorneys General, “a ‘renewable’ energy source is defined as any energy source that is replenishable and replenished on some reasonable time scale. Renewable energy sources include, but are not limited to, wind, sun, heat from the earth’s interior, oceans and rivers, and eligible biomass.” [http://www.naag.org/issues/pdf/Green\\_Marketing\\_guidelines.pdf](http://www.naag.org/issues/pdf/Green_Marketing_guidelines.pdf). This is consistent with Green-e.

This document does not seek to holistically explain the current state or future of carbon regulation. Rather, the discussion assumes the status quo of voluntary emissions markets and the absence of specific cap and trade policies. When cap and trade programs are operational in the U.S., the marketers of Green-e products will be subject to Green-e's policies in reaction to any cap and trade rules. The Green-e program has made it clear that they will not certify renewables that involve double-counting of carbon claims, including claims related to cap and trade programs.

**This document was produced by select members of the Power Marketers Advisory Committee and the Utility Green Pricing Advisory Committee, not of the Green-e Program or the Center for Resource Solutions (CRS), and does not necessarily represent Green-e or CRS policy.**

### ***1. Why should we care about voluntary renewable energy purchasing and its relationship to reducing greenhouse gas emissions?***

#### Facts:

Citizen awareness and concern for climate change is at an all time high in the United States. In its April 3, 2006 edition, *Time Magazine* published a special report that focused on the urgency of climate change and reported that today 85% of Americans believe global warming is happening.<sup>2</sup> Several recent analyses have concluded that the United States and other industrialized countries may need to reduce carbon emissions by as much as 60 to 80% below 2000 levels by 2050 to avoid dangerous climate change. This is a more far reaching goal than is addressed by today's proposed cap-and-trade programs alone. According to the U.S. Department of Energy, in the United States about 40.5 percent of human-caused CO<sub>2</sub> emissions are attributed to the combustion of fossil fuels for the generation of electricity<sup>3</sup>. Proposed cap and trade programs such as Regional Greenhouse Gas Initiative<sup>4</sup> only address emissions from electric power generators – leaving most greenhouse gas sources to continue emitting as usual.

#### Analysis:

To make a serious attempt to reduce greenhouse gas emissions, there is a need for action that goes above and beyond regulatory mandates. Citizens and institutions have recognized this need and are eager to play a part to reduce their own contributions to climate change. This is evident in the increasing number of individuals and businesses taking voluntary actions to reduce their carbon footprints through the purchase of renewable energy or other carbon offsets<sup>5</sup>. The energy sector is one of the main producers of greenhouse gases, and renewable energy, which is carbon neutral, is one of the best tools for avoiding greenhouse gas emissions.

Customers that voluntarily purchase renewable energy, or green power, do so for a variety of reasons, but principal among them is a desire to create environmental benefits.<sup>6</sup> Many corporations and institutions in particular are motivated by a desire to make greenhouse gas reduction claims<sup>7</sup>.

Voluntary purchasing of renewable energy is an excellent complement to renewable energy and carbon emissions mandates. Renewable Portfolio Standards and carbon cap-and-trade programs are having and will have a significant positive effect on renewable energy development and reduction of GHG emissions. But less than half of emissions are governed by those mandatory programs, many unregulated sectors want to do their part. Renewable energy is one of the best options available to take action.

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<sup>2</sup> Jeffrey Kluger. "Earth at the Tipping Point." *Time Magazine*. Time Inc. April 3, 2006 Edition.

<sup>3</sup> [http://www.eia.doe.gov/cneaf/electricity/page/co2\\_report/co2report.html](http://www.eia.doe.gov/cneaf/electricity/page/co2_report/co2report.html)

<sup>4</sup> <http://www.rggi.org/>

<sup>5</sup> A carbon offset zeros out (offsets) all or part of the carbon dioxide emissions of a party, by reducing the emissions -- or increasing the carbon dioxide absorption -- of another party.

<sup>6</sup> See for example, B. Farhar, *Willingness to Pay for Electricity from Renewable Resources: A Review of Utility Market Research*. Golden CO: National Renewable Energy Laboratory (NREL), 1999; E. Holt, R. Wiser, R. Mayer and S. Innis, *Understanding Non-Residential Demand for Green Power*, Washington DC: National Wind Coordinating Committee, 2001; R. Lehr, W. Guild, D. T. and B. Swezey, *Listening to Customers: How Deliberative Polling Helped Build 1,000 MW of New Renewable Energy Projects in Texas*, Golden CO: NREL, 2003.

<sup>7</sup> See attachment A for a sampling of the hundreds of recent press releases resulting from green power purchases that mention the carbon offset benefits of renewable energy.

## ***2. Are mandates such as state Renewable Energy Portfolios responsible for most renewable energy development?***

### Facts:

Renewable energy is sold in two markets – compliance and voluntary. The compliance market includes all transactions satisfying legislative mandates or regulatory requirements such as a Renewable Portfolio Standard (RPS). The voluntary market consists of all transactions to customers that demand more renewable energy than what they are receiving in their standard utility mix. The voluntary market includes utility green pricing programs, green power offerings by competitive electricity marketers, and the sale of Renewable Energy Certificates (RECs). To be legitimate voluntary sales must reflect renewable energy that is in addition to mandated levels.

According to the U.S. Department of Energy, as of the end of 2003<sup>8</sup>, 2,004 megawatts of new renewable energy capacity were constructed as a result of mandates. A study by the National Renewable Energy Laboratory estimated that in 2004 *voluntary* purchasing of renewable energy supported 2,233.3 MW of installed “new” renewable energy capacity with 455 additional MW planned<sup>9</sup>.

The voluntary market for green power began modestly in the late 1990s and now serves over 500,000 residential consumers and many large government, corporate and institutional customers driving demand for an estimated 10 million megawatt hours (MWh) of renewable energy per year. The combined purchase of just the top five U.S. EPA Green Power Partners<sup>10</sup> is over 2.6 million MWh of new renewables annually:

1. U.S. Air Force	1,043,558 MWh
2. Wells Fargo and Company	550,000 MWh
3. Whole Foods Market	463,128 MWh
4. U.S. Environmental Protection Agency	329,880 MWh
5. Johnson & Johnson	306,418 MWh

Currently, the Green Power Partnership boasts more than 500 members, whose annual green power commitments exceed 7 million MWh.

### Analysis:

Many observers make the mistaken assumption that the compliance markets have supported the installation of considerably more renewable energy capacity than the voluntary markets. Both the voluntary and compliance markets for renewable energy are growing quickly, in complement with one another, to build a healthy renewable energy marketplace. Voluntary purchasing gives consumers the best of both worlds by empowering them to demand levels of renewable above and beyond levels mandated by law.

<sup>8</sup> Unfortunately, more recent data are not available.

<sup>9</sup> [http://www.eere.energy.gov/greenpower/resources/tables/new\\_gp\\_cap.shtml](http://www.eere.energy.gov/greenpower/resources/tables/new_gp_cap.shtml). In this analysis NREL defined new renewable resources as projects or portions of projects built specifically to serve green power customers or recently constructed projects that are used to supply green power customers and meet *Green-e* standards for new renewables.

<sup>10</sup> The Environmental Protection Agency’s Green Power Partnership is a voluntary partnership between the EPA and organizations that are interested in buying green power. The Green Power Partnership provides assistance and recognition to organizations that demonstrate environmental leadership by choosing green power. <http://www.epa.gov/greenpower/partners/top25.htm>

### ***3. Just how “business as usual” is voluntary renewable energy business?***

The premise of voluntary markets is that customers want to create incremental change and not just support “business as usual” activities.

#### Facts:

Renewable energy markets have grown exponentially in recent years. But taking off the rosy glasses, it is clear that renewable energy – in particular building renewable energy facilities that are not mandated - is not business as usual. Of the total U.S. electrical generation capacity added between 1/1/1997 and 12/31/2004, 95% was natural gas and no more than 5,758 MWh of Green-e eligible renewables were added (or 2.33% of new capacity)<sup>11</sup>. Further, the 2.33% figure is based on nameplate capacity, the maximum instantaneous output possible for the installed generation – not on units of energy produced. Since the vast majority (approximately 87%) of Green-e eligible renewable energy installations in the past decade have been from wind power, which is an intermittent resource, the 2.33% figure is far greater than renewable energy’s actual supply to the market.

Further, a considerable portion of the renewable energy that meets Green-e renewable resource definitions would be ineligible for Green-e because it is serving a state mandate. Based on several recent reports, a reasonable and conservative estimate is that approximately 3,000 of the 5,758 MW’s of resources potentially Green-e eligible are generating electricity to meet legal mandates. Hence, there are roughly 2000-3000 MW’s of renewable generation that are eligible to be used for voluntary market sales. Of this total, at least 1000 MW is being used for green pricing or competitive electricity sales, leaving somewhere between 1000-2000 MW’s for sales of Renewable Energy Certificates (RECs) in the voluntary market. This represents ***less than 1% of total generation installed since 1997.***

#### Analysis:

Remembering that the capacity factors for renewable energy are generally much lower than for other capacity added since 1997, our 1000-2000 MW estimate amounts to a share of electricity generation from new facilities of no more than half a percent for facilities put online in the last ten years – the boom period for renewables. Therefore, we feel it is safe and conservative to conclude that voluntary renewable energy production – at less than 0.5% of production put online in the past decade - is not a business-as-usual practice. These renewable facilities are above and beyond mandated levels and are the result of voluntary demand.

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<sup>11</sup> The Green-e staff analysis of federal data is available upon request from the Green-e Program.

***4. Is voluntary renewable energy purchasing recognized as a legitimate source of carbon emissions reductions by any major greenhouse gas reduction programs?***

Facts:

Several leading greenhouse gas reduction programs already recognize the important role of renewable energy purchasing as a means for reducing greenhouse gas emissions. These include:

- World Wildlife Fund’s Climate Savers Program
- California Climate Action Registry
- The Climate Group and the International Emissions Trading Association’s Voluntary Carbon Standard
- World Resource Institute’s Corporate GHG Accounting and Reporting Standard
- U.S. Environmental Protection Agency’s Climate Leaders.

In addition members of the Chicago Climate Exchange can be credited with reducing their mandatory GHG baseline through purchases of renewable energy. Further, several of the lead environmental non-profit advocates for policies and voluntary action to prevent climate change are offsetting their organizational GHG foot print through renewable energy purchasing including: Greenpeace, Union of Concerned Scientists, and Sierra Club. Appendix B provides links to and excerpts from those standards, highlighting their accounting protocols for voluntary purchases of renewable energy as a valid way to address carbon emissions.

Other programs that recognize the importance of voluntary renewable energy purchasing currently include:

- US EPA Green Power Partnership (<http://www.epa.gov/greenpower/>)
- WRI Green Power Market Development Group (<http://www.thegreenpowergroup.org/>)
- Energy Freedom Challenge (<http://www.energyfreedomchallenge.org/>)
- Cities for Climate Protection (<http://www.iclei.org/index.php?id=1118>)
- U.S. Mayors Climate Protection Agreement (<http://www.seattle.gov/mayor/climate/>)

Analysis:

There is broad consensus that renewable energy purchasing is a legitimate source of reducing “indirect” greenhouse gas emissions. GHG Registries account for emissions using indirect and direct categories. A direct emission is one that takes place on-site (i.e. the emissions from a home natural gas water heater). Indirect emissions are emissions that occur off-site but are caused by an activity on-site (i.e. emissions from the generation of electricity supplied to the home). In short, for GHG accounting purposes there is a unit of direct emission (at a power plant for instance) for every unit of indirect emission (accounted for at the point of use).

Understanding the implications of accounting for direct and indirect emissions may seem daunting, particularly if one is concerned about a double-claim on a MWh of renewable energy. The good news is that purchasers of Green-e certified products can rest assured that their MWhs are not being double claimed.<sup>12</sup> The environmental benefits of Green-e certified renewable

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<sup>12</sup> For example, Green-e policy states that:

Green-e is certifying fully aggregated renewable energy products only. To be eligible, a REC or energy product must, to the extent possible based on current law, contain all of the environmental attributes that were associated with that unit of renewable generation when it was generated.

energy belong solely to the buyer. No double counting of benefits is allowed, and the verification process ensures that is the case. Accordingly, while the benefit (i.e. the reduction of GHG emissions on the power grid) occurs offsite (i.e. at a fossil plant) it belongs to the purchaser of the renewable energy. Any benefit from a MWh of renewable energy that is claimed by another party would make it ineligible for Green-e certification. Fossil plants that back down will likely be able to report to regulators their reduced direct emissions, but that does not necessarily mean that they are receiving “credit” for those reductions. Only one party gets to claim the benefit from Green-e certified renewable energy: the purchaser. As such it does not so much matter whether a reduction is indirect or direct if the renewable energy is Green-e certified, because only one claim on the reduction can be made. If it is clear that another party is recognized by regulators as having title to the reduction claims, Green-e would not certify the MWh.

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1) In cases where there is a cap and trade program and emissions allowances are not assigned to any renewable energy generator (i.e. SO<sub>2</sub>), the RECs are not assumed to contain these emission allowances and the purchase of additional emissions allowances is not required to qualify as a fully aggregated REC.

2) In cases where a pollutant is capped and traded and emissions allowances may be assigned to a renewable electricity generator on a case by case basis (i.e. NO<sub>x</sub>—a local pollutant, with allowances traded within the jurisdiction where issued, with limited quantities of allowances set aside for some portion of renewables in some states) Green-e considers the conveyance of this type of allowance to be an optional extra benefit and the allowances are not required to convey to the customer. If a marketer does convey that allowance to its end-use customer, it may make claims about that allowance and resulting reduction of that pollutant.

3) In cases where there is no cap and trade program (i.e. carbon dioxide) - All RECs are assumed to contain these emission reduction benefits and these must transfer to the end-use customer with the sale of the REC or be retired on behalf of that customer. RECs that do not contain these attributes cannot be Green-e certified.

4) It is Green-e's intention to have consistent treatment of RECs by jurisdiction. Therefore, Green-e will not require specific treatment of any emissions allowances unless and until all similarly situated renewable electricity facilities in a cap and trade jurisdiction automatically receive such allowances. If the assignment of emissions allowances becomes routine for renewable electricity facilities throughout a cap and trade jurisdiction (nationally or regionally) then Green-e will reevaluate its position. For example, Green-e will address issues related to the Regional Greenhouse Gas Initiative after the state rules are approved.

### *5. Are Green-e certified renewables different than other renewables?*

#### Facts:

The Green-e® Renewable Energy Certification Program ([www.green-e.org](http://www.green-e.org)) has two key aspects: a set of eligibility criteria that define qualifying products, and a Code of Conduct that includes a verification protocol which ensures that certified products meet the criteria. Green-e criteria include requirements that:

- 1) Participating facilities are put online after January 1,1997 (when voluntary markets for renewables and the Green-e program were established);
- 2) Renewables built to serve state and federal mandates such as a Renewable Portfolio Standard are excluded from eligibility;
- 3) Renewables for which environmental attributes are claimed by more than one party are excluded from eligibility (i.e. no double selling, double use, or double claiming); and
- 4) A system of annual independent auditing verifies the aforementioned requirements<sup>13</sup>.

These elements have made Green-e the nation's leading certifier of renewable energy.

#### Analysis:

The Green-e standard has been developed with the intent of pushing new developments of renewable energy that would not have happened without voluntary market purchases. This limits Green-e certified renewables to a subset of all renewables that are added to serve the voluntary market. The Green-e Program and its participating marketers are concerned about ensuring that voluntary purchasing supports incremental renewables because we realize customers expect and desire that their renewable energy purchasing dollars help stimulate additional renewable energy generation.

Not all renewable energy products are equal, and some do not meet best practices. Customers wishing to support meaningful reductions in GHG emissions can easily identify Green-e certified products and know that their purchase is making a positive difference. If a product is not Green-e certified, it may be difficult to determine whether the product is making a difference in stimulating the development of new renewables.

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<sup>13</sup> For a full and complete description of all Green-e certification and verification protocols refer to the Green-e website: [www.green-e.org](http://www.green-e.org). procedures

## ***6. Do Green-e certified renewables stand up to the additionality tests used by the leading greenhouse gas protocols?***

### Facts:

As CO<sub>2</sub> reduction is the primary driving motivation for many voluntary green power buyers<sup>14</sup>, “additionality” is an important factor in determining quality. “Additionality” means that the project or activity would lead to reductions in emissions that are in addition to any that would occur in the absence of the project or activity. The United Nations Framework Convention on Climate Change has a tool for the demonstration and assessment of additionality<sup>15</sup> that includes a six-step process that evaluates project start date, alternatives to the project activity, investment/barrier analysis, evaluation of common practice and impact of CDM registration. Likewise, Rocky Mountain Institute<sup>16</sup> recently wrote that the following criteria should be evaluated when considering an offset’s quality: Real, Surplus, Verifiable, Permanent, and Enforceable. These keywords were included in the Regional Greenhouse Gas Initiative MOU as evaluation criteria, and are considered by many to be the basis of a legitimate offset<sup>17</sup>.

### Analysis:

As the market for green power and other forms of voluntary CO<sub>2</sub> offsets grows, comparisons are made between quality standards in place for voluntary CO<sub>2</sub> offsets in general and the question of additionality in particular. Sometimes these comparisons fail to distinguish between Green-e certified renewables and other renewables. Others fail to recognize Green-e’s history of policy development that ensures that certified renewable energy products make a difference, while there is a general lack of recognized quality voluntary standards for CO<sub>2</sub> offsets from other sources. There is good reason to call attention to the need for transparent quality standards for voluntary CO<sub>2</sub> offsets, but failing to recognize and acknowledge the well-established quality standards in renewable energy markets does not serve the interests of stakeholders. While there currently is no single recognized quality standard for the CO<sub>2</sub> retail offset market, the idea of additionality is widely held as the most critical criterion for determining the quality of an offset.

The Center for Resource Solutions has undertaken efforts over the past ten years to ensure that Green-e certified products meet the types of criteria that CO<sub>2</sub> offset methodologies seek to achieve. There may not be universal agreement on what constitutes additionality, but Green-e criteria can arguably meet the intent of the criteria:

**Real:** Green-e will only certify MWhs that are actually generated, metered, and delivered to the grid - though purchase commitments can be made in advance of generation.

**Surplus:** A surplus offset in the context of voluntary renewable energy projects is one that was not mandated, was built during the era of voluntary markets, and essentially is not business as usual. Green-e will not certify renewable energy output that has been mandated, such as that used to satisfy an RPS, and will only certify renewable energy from facilities put online after January 1, 1997, when the voluntary market began. As discussed above, installation of renewable energy in the United States is far from business as usual.

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<sup>14</sup> See Appendix A for examples of corporate statements about the importance of carbon reduction benefits of renewable energy purchasing.

<sup>15</sup> [http://cdm.unfccc.int/methodologies/PAMethodologies/AdditionalityTools/Additionality\\_tool.pdf](http://cdm.unfccc.int/methodologies/PAMethodologies/AdditionalityTools/Additionality_tool.pdf)

<sup>16</sup> [www.rmi.org/sitepages/pid1215.php](http://www.rmi.org/sitepages/pid1215.php)

<sup>17</sup> See comments by PIRG, Conservation Law Foundation, NRDC and others on the RGGI proposed rules.

**Verifiable:** Green-e certified MWhs must be from revenue-quality metered facilities, unless they are from very small facilities (less than 10 kW) such as residential solar, in which case revenue-quality metering is cost prohibitive and government-sanctioned estimates are considered sufficient.

**Permanent**<sup>18</sup>: In the context of GHG protocols, “permanence” addresses whether there is a way for the emissions reductions to become invalid or “lost” over time. When a MWh of renewable energy is generated and pumped onto the electricity system, it has permanently backed down fossil fuel generation (or prevented the need for new fossil capacity) at that point in time elsewhere on the power grid. Other forms of carbon offsets, such as reforestation, present substantial catastrophic loss risks (e.g. forest fire, pest infestation) that pose the serious risk that carbon sequestered in the trees will be returned to the atmosphere, for no net benefit. Renewable energy represents a permanent offset and bears none of these risks.

**Enforceable:** While Green-e is not a regulatory agency, if Green-e determines that a certified product is not meeting our program requirements, the product will be de-certified, customers will be made aware of the decertification, and the Green-e Web site will post information on decertification.

Another aspect of Green-e that should be recognized is in the beauty of its simplicity. Critics of the additionality of renewables have had a very difficult time describing how “additionality” could be proven for a renewable energy project. Some have compared the challenge to knowing whether a piece of art is obscene – you can’t put the criteria in words but you know it when you see it. Green-e has taken a simple and effective approach that is described later in this paper.

Some of the CO<sub>2</sub> offset community is turning a critical eye on RECs and renewable energy purchasing as a source of CO<sub>2</sub> offsets for several reasons. First is a general lack of awareness of the existence of Green-e as the quality standard that explicitly addresses additionality. Secondly, the voluntary CO<sub>2</sub> offset markets for non-renewable energy offsets are more nascent (fewer than 50,000 customers) and less organized than green power markets and have no recognized quality standard. Green power, particularly nationally derived RECs, is a relatively low cost source of CO<sub>2</sub> offsets and has thus absorbed a large share of voluntary demand for CO<sub>2</sub> offsets. The combination of a lack of awareness of the standard governing green power and the competitive concern that low priced RECs will “flood” the market for voluntary CO<sub>2</sub> offsets and drive out higher priced or less efficient offsets is fueling a debate that needs to be settled with facts and reason.

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<sup>18</sup> For voluntary renewable energy markets, the main future threat is that a new cap and trade program could impose rules that prevent renewable energy generators from being issued reduction credits, and therefore renewable energy would by definition not reduce overall emissions of carbon. This is currently the case for SO<sub>2</sub> markets, for example, where renewable energy generators are not issued SO<sub>2</sub> credit and therefore overall SO<sub>2</sub> emissions are the same whether or not renewables are generated. If this same policy decision is imposed for carbon markets, then Green-e would likely not honor RECs from that trading area as eligible for the Green-e program.

### *7. How many tons of emissions are offset by a MWh of Green-e certified renewables?*

#### Facts:

Several forms of renewable energy- including wind, hydro, solar and geothermal – are emissions free. While biomass is not emissions free, many forms of biomass are considered to be carbon neutral over the lifetime of the fuel. Wind, bioenergy, solar, geothermal, ocean, and incremental hydropower from existing dams are both carbon-neutral and truly renewable – which cannot be said about natural gas, “clean” coal, or nuclear power. Each MWh of renewable energy generation means that there is one MWh less need for non-renewable energy. Green-e certified renewables prevent upstream and downstream environmental impacts from fossil fuel extraction, refining, transport and waste disposal.

#### Analysis:

Zero emitting renewable generation reduces the need for or displaces other forms of emitting generation and produces environmental benefits. The CO<sub>2</sub> displacement value of renewables is most commonly based on the US EPA’s guidance to utilize eGRID database average CO<sub>2</sub> emissions per MWh by NERC sub-region. To describe this in more detail, eGRID catalogues the emissions profile of each electric grid region in North America. In this simple approach, one megawatt-hour of new renewable generation is assumed to displace one MWh of average system power and thus displace the emission profile of an average MWh of power. This estimation is a surrogate for knowing minute-by-minute, hour by hour exactly what emissions profile is displaced by a MWh of renewables; an almost impossible task – or at least a task whose completion would cost more than the economic value of the offset itself. Assuming average system emissions is conservative because the average includes sources that have no emissions and renewable generation almost always displaces generation with emissions. There is no method in place to precisely calculate the CO<sub>2</sub> emission displacement value of renewable energy. What is central, however, is that all participants utilize the same methodology. Use of eGRID average system emissions for each NERC sub-region is the prevailing method in use and a conservative estimation methodology.

But what can a buyer of renewable energy claim when they make a statement about reducing their organization’s carbon footprint? Whether buyers purchase renewable energy either as renewable energy certificates or as bundled green power through their electric service provider, they are reducing emissions “upstream” (occurring outside their own building). This is because most companies do not produce their own electricity, but instead buy it – making them responsible for their “indirect” emissions associated with their energy consumption. When a company wishes to be “carbon neutral” they will largely rely on “offsetting” their indirect emissions with zero-emission renewable energy.

***8. How can customers be assured that there is no double-counting of Green-e certified renewables?***

Facts:

Annual verification is a major component of Green-e certification, ensuring that renewable energy products meet program standards. All marketers that offer a Green-e certified product undergo an annual verification audit to document that the company purchased or generated enough quantity and the specified type of renewable energy to meet customer demand and marketing claims. See Appendix C for a summary of renewable energy oversight.

Analysis:

Providers of Green-e certified renewable energy agree to meet the criteria outlined in the Green-e National Standard, abide by the Green-e Code of Conduct, and meet Green-e disclosure and truth-in-advertising requirements. Green-e's marketing compliance review, also conducted at least annually, takes a critical look at all marketing materials used in conjunction with Green-e certified products to ensure that customers received accurate and adequate information about the product. The Green-e program's strict customer disclosure requirements go beyond even what is recommended in the National Association of Attorneys Generals Environmental Marketing Guidelines for Electricity, and typically beyond what is required by most states.

***9. If renewable energy such as wind power is getting so cheap, and the fuel is free, won't utilities just build it anyway?***

Facts:

Green-e does not use a financial “additionality” test to evaluate whether a specific project is financially competitive with non-renewables. Instead, Green-e will only certify a project’s output if it meets program criteria. Those criteria require that the renewable energy be sourced from a facility that came on-line after January 1, 1997, not be mandated, and not be claimed by more than one party.

REC prices range from less than \$3 per MWh to over \$50 in New England where RPS requirements have created acute scarcity. The price of RECs is a function of supply and demand and varies by region according to geography, fuel type, vintage, and presence of an RPS market. Low priced RECs are largely a reflection of market efficiency and result in increased demand. Historically there were \$1 RECs available in recent years, but recent large purchases such as Wells Fargo 550,000 MWh per year or Whole Foods 400,000 MWh per year have fundamentally changed the market. The forward price curve for REC prices is much higher now.

Analysis:

Creating a financial yardstick to determine if a project is “additional” is essentially impossible. Not only would it be excruciatingly time consuming and expensive to examine the financial statements of each project and know what was in the heart and mind of a developer, but there is no guarantee that the data presented would be accurate at the time it was presented, or that it would represent the final costs of the project. Who would decide what the “proper” amount of profit would be? What costs would be allowed or disallowed? What if a project developer chose to use union labor and that raised costs (and potentially quality)? Would that be approved? A financial yardstick creates an incentive to raise the price of a generating facility to “prove” the need for additional funds.

An alternative suggestion from critics is that a renewable energy facility must be built after GHG or REC payments are received in order to prove “additionality”. There is no reason to believe that gathering voluntary GHG payment for a project prior to its construction is any more or less likely to guarantee its “additionality” than paying for the project costs over several years. Gathering the payments up front is simply a different financing mechanism. Most REC marketers choose to ask the renewable energy generator to take the financing risk, and the result of this model has been the addition of 2,200 MW of new renewable generation. We are only aware of a few wind turbines built under the “collect the premiums up front” model.

There are plenty of barriers besides financial barriers that keep renewables from being developed regardless of whether a spreadsheet indicates that the project is financially viable. Green-e supports the notion that only activities that produce real GHG reductions should be sold in retail markets and that any GHG reductions from renewable energy must be from projects that are not business-as-usual. However, the fact that currently operating wind projects in some rare cases may be a cost-competitive at some point in the future, should not be a reason to count them as “not additional”. In fact, if this were true, why isn't there more wind generation?

Further, the very idea of establishing a trading mechanism for GHG reductions is to take advantage of the opportunity to seek out the most cost-effective GHG reductions. If financial viability is a reason to rule out low-cost wind projects, then we would be creating a bizarre set of incentives for the renewable energy industry - "Make the financials look bad, and we'll send the money! Build where it's not that windy, and you'll have plenty of support from GHG markets!"

World Resources Institute did an excellent job of articulating the role of voluntary renewable energy purchasing when they wrote:

*"Renewable power facilities generate and sell RECs as a revenue stream in addition to the revenue from selling commodity electricity. The revenue from certificates typically covers at least the incremental cost of renewable power generation over conventional power generation. The sale of RECs to marketers or directly to customers provides the additional cash flow required for the renewable energy project to be financially viable over its lifetime."*

This sentiment is echoed by the renewable energy development community. Steve Wright, CEO of Bonneville Power Administration described the importance of RECs to their development of wind project:

*"To move ahead with wind projects in the Northwest, BPA needed a way to share the up front costs with people and businesses who cared about renewable energy. When BEF (The Bonneville Environmental Foundation) created its Green Tag product in 2000, we had the tool we needed to become one of the country's largest wholesalers of new wind energy. BEF deserves recognition for this contribution -- from us, from the region, and from the national renewable energy community."*

Likewise, other developers of renewables have stressed the role of RECs in their finance model:

*"In all 8 wind energy projects that CEI has developed or helped to finance with Renewable Energy Credit (REC) marketing efforts, REC revenue streams were explicitly valued (based on voluntary market customer contracts or market projections) and vital to project feasibility. As the industry continues to evolve, reliable REC revenue streams will be even more critical to flipping the economics of wind energy in the positive direction."*  
Brent Beerley, Vice President, CEI

Voluntary purchasing of renewables provides a funding source to help support the growth of new renewable energy production. Renewable energy also creates regional economic development opportunities, including increased employment, and increased revenues to local landowners and towns.

**Summary and Conclusion**

Renewable energy generation is consistently identified as a primary means of reducing future carbon emissions. Interest in renewable energy, and in reducing greenhouse gas emissions, is growing as evidenced by heightened media attention in recent years. Voluntary markets for renewable energy were established in 1997, have been growing steadily since, and now support over 2500 MW of new renewable energy generating capacity. The Green-e program has provided the voluntary renewable energy marketplace with a clear set of rules that ensure best practices are being followed, including requirements that greenhouse gas reduction benefits associated with renewable energy are conveyed to the purchaser. This is critically important, as greenhouse gas reduction benefits are an increasingly important motivator for purchasers of renewable energy. The Green-e Program and its market participants agree that not all renewable energy products meet “additionality” criteria, and that’s why buying and selling Green-e certified products is so important – this is how we ensure REC purchasing creates additional renewable energy generation and reduces greenhouse gas emissions.

### **The Parable of Additionality of Organic Cornflakes**

A man is standing in the cereal aisle of his local supermarket, deciding whether to buy cornflakes made with certified organic ingredients or cornflakes made with corn of unknown origin. The man is an avid fly-fisherman, and wants to do what he can to prevent pesticide runoff into watersheds.

He looks at the organic variety and thinks about how those cornflakes are produced without using conventional pesticides, synthetic fertilizers, or sewage sludge. His purchase would help support the transformation of agriculture toward a more environmentally friendly future. Sure, buying this box of cereal won't change the world. But in making a choice between two otherwise similar products, shouldn't he buy the one whose production has less impact on the watershed?

Then he looks at the regular cornflakes and wonders about the impact of its ingredients on water quality. The corporate agro-business that supplied the corn probably used some chemicals that you wouldn't want in your cereal bowl or in your trout. But this is just a box of cereal, right?

On the other hand, he thinks, each box of organic cereal purchased directs dollars at organic farming, and reduces demand for non-organic corn. Buying organic seems to be a simple and available way to influence agro-business practices.

Then the man recollects an article he'd read recently about something called "additionality". An academic had criticized the use of renewable energy purchasing as a way to offset carbon emissions. A point was made that, if a wind farm – one that was built in recent years yet not by mandate -- is already operating, then there is no point in supporting that wind farm as a voluntary customer because the payment wouldn't make a difference in bringing a future facility online. Following that logic, the man thought, I don't need to buy organic cornflakes because I know that the farm supplying the organic corn is already organic and pesticide free! The organic cornflakes have been made – mission accomplished! In fact, the man continued, only a fool would buy organic products at all, because once the organic product is on the shelf, the farm supplying the ingredients has already changed its practices to environmentally friendly ones and doesn't need further support. Following that logic, buying those organic cornflakes is simply putting money into the pockets of organic farmers – it won't change a thing!

Right? Wrong, the man concluded. Organic and wind farms share a few things in common. One is that consumer demand is needed to support practices that are not business as usual. Ongoing consumer support will ensure that today's organic farms will be able to sustain themselves. And increased consumer demand will create further opportunities for the development of more acreage of pesticide-free farming.

Even if pesticide prices rise and organic products become cost-competitive, buying them is still important because organic products are such a small portion of the market that by definition organic is not business as usual, and the organic farmer needs to go through considerable steps to become certified. The same applies to wind farming's relation to the national electric grid.

The man grabs the organic cornflakes, and as he takes \$5 out of his wallet he thinks "that's one small purchase for me, but what would happen if everyone chose organic"?

**Attachment A: Press Release Excerpts from Select Renewable Energy Purchasers**

**UPS:** "This commitment, which will **prevent the release** of 2.4 million pounds of **carbon dioxide**...has the equivalent environmental impact of removing 213 cars from the road for a year."

**U.S Air Force:** "Through the purchase, Dyess [Air Force Base] demonstrates Federal leadership...[by] supporting the President's call for voluntary **reductions in greenhouse gas emissions**."

**Interface Fabrics:** "Interface Fabrics signed a...contract...to purchase 12,500 MWh of Green-e certified RECs from three wind farms in the U.S. This purchase **offsets the greenhouse gas** environmental impacts of the electricity needed to produce select patterns of Terratex® brand fabrics.

**Starbucks:** "Starbucks is mindful of the long-term implications that climate change has on the environment...Because the energy used at our retail stores makes up nearly 50 percent of our total **greenhouse gas emissions**, this is a natural starting point for us."

**Safeway:** "The EPA, using average **avoided carbon dioxide emissions** nationally, estimates that Safeway's purchase is equivalent to avoiding more than 85 million pounds of carbon dioxide, comparable to planting more than 10,500 acres of trees".

**Tazo:** "Clean air and healthy communities are important to us all. For this reason, Tazo has made a commitment to purchase renewable energy certificates from 3 Phases Energy for energy derived from wind resources. This purchase helps to improve air quality, **reduce greenhouse gas emissions**, and is an important investment in a renewable energy future. This commitment to wind energy for 2005 will reduce Tazo's carbon dioxide emissions by over 1.5 million pounds".

**City of Santa Clara:** "Through its latest commitment, Santa Clara's City Hall will be effectively preventing 180,000 pounds of **carbon dioxide emissions** from entering the atmosphere and helping create a cleaner environment"

**Pacific Gas & Electric:** "PG&E calculated that the homes and businesses in San Francisco produce 6,300,000 pounds of carbon dioxide pollution every day through their electricity use. In a ground-breaking effort to reduce pollution, the utility purchased 100% new wind energy **certificates to offset those emissions**".

**HSBC:** "Recognizing the importance of climate change, last December HSBC became the world's first major bank to commit to carbon neutrality and it has announced that it **has offset a substantial quantity of its carbon emissions** by purchasing a total of 79, 181 MWh of clean, wind energy certificates for three separate HSBC entities; HSBC Canada, HSBC North America and HSBC USA. These purchases are among the largest retail renewable energy purchases ever made in North America. Electricity production is the leading cause of greenhouse gas emissions that contribute to global climate change. The bank is making strides towards working against climate change with a this 45,454 MWh annual commitment which will offset 30% of its

emissions and will prevent the release of over 36,000,000 pounds of carbon dioxide (CO<sub>2</sub>), a leading global warming gas”.

**The Holland:** “The Holland, Inc. and its restaurants are purchasing renewable “clean” wind power from [Portland General Electric](#) (PGE), [Pacific Power](#), [Clark Public Utilities](#), [Columbia River People’s Utility District](#) (PUD), [Cowlitz Public Utility District](#) (PUD) and Green Tags from the [Bonneville Environmental Foundation](#) (BEF). By utilizing wind power, The Holland, Inc. and its restaurants will **avoid adding 17.4 million pounds of CO<sub>2</sub>** to the region annually”.

**University of Colorado:** “In the spring of 2004, the student government voted to extend and expand the University wind power purchase, and this clean, renewable source of energy will **lower campus emissions of carbon dioxide** by roughly 12 million pounds every year!”

**Office Depot:** “The new agreement is expected to result in Office Depot purchasing approximately 12 million kilowatt hours (kWh) of renewable energy on an annual basis. The energy purchased through this agreement, called “Landfill Gas to Energy” (LGE), is 50 percent less carbon-intensive than conventional electricity generation and will be responsible for **reducing approximately 3 million pounds (or 1,400 tons) of greenhouse gas emissions (CO<sub>2</sub>) per year**. The environmental benefits of using landfill gas is equivalent to removing 260 passenger cars from the road or supplying electricity to 300 households for one year without any CO<sub>2</sub> emissions.”

**Johnson and Johnson:** “We are committed to achieving substantial **reductions in CO<sub>2</sub> emissions** through... such off-site means as purchasing green power and trading carbon emissions credits.”

**World Bank:** Announcing a Green Power purchase - “This purchase ... is equivalent to **eliminating the carbon dioxide emissions** of more than 10,000 cars for a year...”

**Livingston County:** “Livingston County purchases 10% of its electricity through RG&E's Catch the Wind program making it the first county in the state to purchase wind energy for a portion of its electricity use. The Livingston County purchase provides the environmental benefit of eliminating over 400,000 pounds of **carbon dioxide emissions**, 1,500 pounds of sulfur dioxide emissions and 500 pounds of nitrogen oxides emissions. The carbon dioxide reduction is the equivalent of planting over 30,000 trees or not driving over 450,000 miles”.

**Agilent:** "The commitment to renewable power is an extension of a broad set of initiatives we've implemented globally to conserve energy and minimize our impact on the environment," said Roy West, Director, Agilent Environmental Health & Safety. "Santa Clara Green Power allows us to work towards these goals together with our community." Agilent's clean power commitment will provide environmental savings by **preventing the release of over 1.6 million pounds of carbon dioxide**, a key greenhouse gas, annually.

## **Attachment B: Greenhouse Gas Programs that Recognize the Renewable Energy Purchasing as a Means for Reducing Greenhouse Gas Emissions**

### **World Wildlife Fund's Climate Savers Program**

<http://www.worldwildlife.org/climate/projects/climateSavers.cfm>

"There are many ways that companies can reduce CO2 emissions, including: ...purchasing power generated from renewable energy sources."

### **California Climate Action Registry: General Reporting Protocol**

<http://www.climateregistry.org/docs/PROTOCOLS/GRP%20V2.1.pdf>

see page 34 on "Recognizing the Benefits of Green-Power and Renewable Energy Certificates Purchases "

### **The Voluntary Carbon Standard. Verification Protocol and Criteria, Version 1 for Consultation**

<http://www.theclimategroup.org/index.php?pid=778>

"Emission reduction project types eligible under the VCU Verification Criteria are listed below, divided into categories for the benefit of project developers and verification entities: 1.

Renewable energy [wind, PV, solar thermal, biomass, liquid biofuels, geothermal, run-of-river hydro]". The VCS goes on to state, "Carbon credits should not be the byproduct from the creation of an ancillary environmental asset and/or financial instrument (e.g. renewable energy credits)." We interpret this to be consistent with Green-e in that Green-e certified RECs must retain any carbon value - and any RECs decoupled of the carbon reduction value or used for a carbon reduction mandate are not eligible for Green-e.

### **World Resource Institute's Corporate GHG Accounting and Reporting Standard:**

<http://www.ghgprotocol.org>

1. Companies can reduce their use of electricity by investing in energy efficient technologies and energy conservation. Additionally, emerging green power markets<sup>19</sup> provide opportunities for some companies to switch to less GHG intensive sources of electricity.
2. IBM: The role of renewable energy in reducing GHG emissions (sideline example in the document)  
Indirect emissions associated with the consumption of purchased electricity are a required element of any company's accounting and reporting under the *GHG Protocol Corporate Standard*. IBM has implemented a variety of strategies that would reduce either their demand for purchased energy or the GHG intensity of that purchased energy. One strategy has been to pursue the renewable energy market to reduce the GHG intensity of its purchased electricity.
3. Alcoa: Taking advantage of renewable energy certificates (sideline example in the document)  
Alcoa, a global manufacturer of aluminum, is implementing a variety of strategies to reduce its GHG emissions. One approach has been to purchase renewable energy certificates, or RECs, to offset some of the company's GHG emissions. RECs, which represent the environmental benefits of renewable energy unbundled from the actual flow of electrons, are an innovative method of providing renewable energy to individual customers. RECs represent the unbundled environmental benefits, such as avoided CO2

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<sup>19</sup> Green power includes renewable energy sources and specific clean energy technologies that reduce GHG emissions relative to other sources of energy that supply the electric grid, e.g., solar photovoltaic panels, geothermal energy, landfill gas, and wind turbines.

emissions, generated by producing electricity from renewable rather than fossil sources. RECs can be sold bundled with the electricity (as green power) or separately to customers interested in supporting renewable energy.

**WRI's Corporate Guide to Green Power Markets: RENEWABLE ENERGY CERTIFICATES: AN ATTRACTIVE MEANS FOR CORPORATE CUSTOMERS TO PURCHASE RENEWABLE ENERGY**  
[http://pdf.wri.org/gpmdg\\_corporate\\_5.pdf](http://pdf.wri.org/gpmdg_corporate_5.pdf)

1. A REC represents the environmental attributes—for example, avoided CO<sub>2</sub> emissions—that are created when electricity is generated using renewable resources instead of using fossil fuel sources such as coal, oil, and natural gas.
2. Of particular interest to many companies are the greenhouse gas (GHG) benefits of buying RECs. Among the environmental attributes represented by a REC are the associated avoided CO<sub>2</sub> emissions when 1 MWh of electricity from a renewable power facility displaces 1MWh of power from fossil fuels in the plant's wholesale market or power pool. By purchasing a REC, a company can claim these avoided emissions to help it meet its own voluntary corporate GHG emissions goals or meet targets established in voluntary GHG emissions reduction programs such as the U.S. EPA's Climate Leaders Initiative or WWF's Climate Savers Program. When applying these reduced CO<sub>2</sub> emissions against total corporate GHG emissions, the buyer must retire the REC; that is, the REC cannot be sold again to another entity. Johnson & Johnson, for instance, is buying and retiring RECs to help the company meet its voluntary corporate GHG emissions reduction targets.
3. Non-industrial customers—including private citizens, government facilities, universities, and other institutions— buy RECs for many of the same reasons that attract corporations. For example, Pennsylvania State University purchases 17,600 MWh of wind-generated RECs annually in order to reflect staff and student commitment to reducing the university's environmental impact. In 2003, the World Resources Institute purchased RECs from wind and other renewable resources to help it meet its climate commitment of emitting zero net greenhouse gas (GHG) emissions annually. The retired RECs offset a significant portion of the GHG emissions associated with WRI's electricity consumption and employee travel. In 2003, WRI also used RECs to offset the estimated GHG emissions from energy use and travel for two major WRI conferences.

**EPA Climate Leaders:**  
[www.epa.gov/stateply/](http://www.epa.gov/stateply/)

In addition to the Core requirements, Partners may choose to expand the boundaries of their GHG inventory to include other optional emission sources. This allows for a wider possible range of emissions from which to achieve GHG reductions. Other optional emission sources include the following:

- Offsite Waste Disposal
- Product Transport
- Employee Commuting
- Business Travel
- International Operations

The Optional Modules provide GHG accounting guidance and reporting forms pertaining to other indirect emissions sources that the Partner has some influence over. Optional Modules include:

**Offsite Waste Disposal:** This module is used to identify and estimate the same basic emissions factors described under the Core Module for waste disposal except the type of data input differs.

**Product Transport:** This module is used to identify and estimate the same basic emissions factors described under the Core Module for mobile emissions except the type of data input differs.

**Employee Commuting:** This module is used to identify and estimate the same basic emissions factors described under the Core Module for mobile emissions except the type of data input differs.

**Business Travel:** This module is used to identify and estimate the same basic emissions factors described under the Core Module for mobile emissions except the type of data input differs.

**International Operations:** This module is used to identify and estimate the same basic emission factors as described in the Core Module for U.S. operations except the type of data input differs.

In addition, the following modules provide guidance for Partners to calculate emissions reductions for goal-tracking purposes from offset investments and renewable energy purchases. Offset Investments: This module is used to address eligibility of projects as GHG offsets and to provide measurement and monitoring guidelines for offset projects. Project protocols include landfill gas, manure management, and boiler replacement projects and are based on a "performance standard" methodology. The guidance documents below are currently in their draft form and are being road-tested by Climate Leaders Partners. Final guidance documents are expected in 2007.

- Afforestation
- Cement Kiln
- Commercial Boiler
- Industrial Boiler
- Iron and Steel
- Landfill Methane
- Manure Management: Anaerobic Digester
- SF6 Repair and Replacement
- Transportation: Bus Fleet Upgrade

**Renewable Energy:** This module is used to identify and estimate reductions from purchases of green power or Renewable Energy Certificates (RECs). Interim final guidance will be posted in October 2006.

## **Attachment C: A Primer on Renewable Energy Oversight**

There are three levels of oversight for renewable energy transactions: certification, verification, and tracking. For the most part these are complimentary, not substitute, activities. Oversight of renewable energy is not without its flaws and unanswered questions, but is substantially more mature, consistent, and consolidated than carbon markets.

### ***1. Certification***

Certification is a way to identify that certain renewable energy products meet a specific standard. Certification instills consumer confidence, helps shape markets, and legitimizes intangibly-differentiated products. Certification also ensures that best practices are being met, assures marketers, regulators, and customers that products are of the highest quality, and may save state resources by reducing regulatory oversight. Green-e is leading certifier of renewable energy.

### ***2. Verification***

Verification is a process for establishing that the primary attributes of an eligible renewable power resource were produced from the designated resource during the designated time period to meet sales. Verification may be by contract provision enforcement, by registration and audit, or by another standardized method. Annual verification is a required component of Green-e.

### ***3. Tracking***

Renewable energy generation can be accounted for in two different ways: through contract-path auditing and through tracking systems. Tracking systems are becoming the preferable method because they support policy compliance and enhance markets. Tracking systems are electronic databases with basic information about each MWh of renewable power generated in a particular region. Electronic tracking systems allow RECs to be transferred among account holders much as in online banking. Renewable energy tracking systems assign a unique identification number for each megawatt hour of renewable electricity generated in a particular region. The database tracks certain information for each megawatt hour, including facility location, generation technology, facility owner, fuel type, nameplate capacity, the year the facility began operating, and the month/year the MWh was generated.

A tracking system can be used by regulators as a registry of generating facilities, as a means of verifying compliance with a Renewable Portfolio Standard, for aiding in the creation of disclosure labels, and for other purposes such as verifying wholesale supply for green power products. Tracking systems are not substitutes for certification and verification, as tracking systems only monitor wholesale transactions – individual retail green power customers do not hold accounts on tracking systems. That is why certification is so important for voluntary purchasers.

There are several regional tracking systems in operation in the U.S., and more under development. Fully operational tracking systems include the New England Generation Information System, ERCOT's Texas Renewables, and PJM's Generation Attribute Tracking System. Tracking systems under development include WECC's Western Renewable Generation Information Tracking System and the Midwest Renewable Energy Tracking System.

### **Attachment D: About the Green-e Program**

The Green-e Renewable Energy Certification sets standards for renewable electricity-based products in three markets for renewable energy: restructured, regulated, and tradable renewable certificates. The Green-e program ensures that certified renewable energy meets several criteria to establish the legitimacy of the carbon reductions. The Green-e program and its thousands of stakeholders have spent years honing the program's criteria to ensure that customers are getting what they pay for, and that customers of Green-e certified products are receiving the highest quality renewable energy products.

- **Green-e is a mature, widely-supported national certification program.** Green-e has a 10-year track record of certifying renewable energy sales. Green-e verified annual sales of over 5 million megawatt hours of certified renewable energy sold by over 100 vendors.
- **Green-e certified transactions are above and beyond business as usual.** Green-e certification requires that certified renewable energy products be sourced from facilities put online after January 1, 1997. In addition, Green-e does not allow use of electricity in a certified product if it has also been used to meet a state or federal mandate.
- **Green-e policies are set through broad stakeholder input in an open and transparent process.** Green-e solicits comments from thousands of stakeholders - environmental organizations, power marketers, renewable developers, energy policy experts and other interested parties – when creating or revising its standards.
- **Green-e policies are consistent with leading greenhouse gas protocols.** Many greenhouse gas protocols and other carbon emissions reduction programs sanction the use of Green-e certified products as a valid offset for carbon emissions. These include WRI's GHG Protocol Initiative, the U.S. EPA's Climate Leaders, World Wildlife Fund's Climate Savers, California Climate Action Registry, and the Voluntary Carbon Standard.

For more information please visit [www.green-e.org](http://www.green-e.org).

**Attachment E: List of Contributors to this Paper**

This paper is a draft under review by the Power Marketers Advisory Committee (PMAC) and Utility Green Pricing Advisory Committee (UGPAC). The PMAC and UGPAC are committees of green power marketers that offer one or more Green-e Certified® renewable energy products in the voluntary market. The PMAC and UGPAC each have one non-voting representative on the Green Power Board which governs the Green-e Standard. The PMAC and UGPAC prepared this paper with the goal of educating the public, customers, and stakeholders on the GHG benefits of voluntary renewable energy purchasing. This draft paper is being circulated for discussion and review purposes. Collectively marketers of Green-e certified products sold 5.2 million MWh of certified renewable energy in 2005 reflecting approximately half of all voluntary renewable energy energy sales.

3 Phases Energy Services	Midwest Renewable Energy Credits, LLC
Accent Energy Group, LLC	MMA Renewable Ventures USA, LLC
Alliant Energy	Platte River Power Authority
APS Energy Services	PowerLight Corporation
Aquila	PPL Energy Plus LLC
Bonneville Environmental Foundation	PPM Energy, Inc.
Buckeye Power, Inc	Renewable Choice Energy
CarbonFund.org	Roseville Electric
City of Palo Alto Utilities	Sacramento Municipal Utility District
Clean and Green, LLC	Select Energy
Community Energy, Inc.	Sky Energy
ConEdison Solutions	Sterling Planet
Conservation Services Group	Tennessee Valley Authority
Constellation New Energy	The Energy Cooperative of Pennsylvania
Consumers Energy Company	Viking Wind Partners, LLC
Element Markets	Vision Quest
Empire District	We Energies
Evolutions Markets LLC	Weyerhaeuser
Green Mountain Energy Company	Wind Current
Hess Energy	Xcel Energy

*This document was produced by select members of the Power Marketers Advisory Committee and the Utility Green Pricing Advisory Committee, and does not necessarily represent the views and opinions of every entity listed here.*