

7.1 Green Power Procurement

Part Two: Clean Energy Best Practices for Local Governments							
6.0 Energy Efficiency	7.0 Energy Supply					8.0 Transportation Technologies and Programs	9.0 Urban Planning and Design
	7.1 Green Power Procurement	7.2 On-Site Renewable Energy Generation	7.3 Combined Heat and Power	7.4 Landfill Methane Utilization	7.5 Working with Utilities		

7.1.1 Overview

Many local governments are using green power in their facilities and providing assistance to local businesses and residents to do the same. Green power is a subset of renewable energy that is produced with no GHG emissions, typically from solar, wind, geothermal, biogas, biomass, or low-impact small hydroelectric sources, includes three types of products: utility products (i.e., green power purchased from the utility through the electricity grid), renewable energy certificates (RECs), and on-site generation. Opportunities to purchase these products are increasing significantly, with annual green power market growth rates averaging 46% between 2003 and 2006. In 2006, green power sales in the U.S. reached 12 billion kWh (Bird et al., 2007).¹

By substituting green power for conventional electricity, which is produced primarily by combusting fossil fuels and is responsible for nearly 40% of total U.S. energy-related carbon dioxide (CO₂) emissions, local governments and their communities can achieve significant energy, environmental, and economic benefits (EIA, 2005).

This section deals primarily with opportunities to purchase, or procure, green power directly from utilities and through RECs. It provides information on how local governments have planned and implemented green power purchases for their facilities and throughout the community, sources of funding, and case studies. Additional examples and information resources are

Green Power and Renewable Energy

Green power refers to renewable electricity that is produced with no man-made GHG emissions, has a superior environmental profile compared to conventional power generation, and was built after January 1, 1997.*

This subset of renewable energy resources includes solar, wind, biogas, biomass, low-impact hydro, and geothermal resources. Other renewable energy resources, such as waste-to-energy and hydropower, are not necessarily green power resources, since they can have adverse environmental impacts, such as air pollution or natural landscape disruption.

* January 1, 1997 is the accepted date marking the beginning of the voluntary green power market. It is argued that renewable energy generation facilities built after this date are the product of increasing market demand for green power, rather than the product of regulatory action, such as renewable portfolio standards, that required utilities to use renewable energy.

Sources: U.S. EPA, 2004; U.S. EPA, 2007.

¹ The 12 billion kWh includes 3.5 billion kWh in sales in regulated markets and 8.5 billion kWh in restructured markets (Bird et al., 2007).

provided in Table 7.1.1, *Green Power Procurement: Examples and Information Resources* at the end of this section. For more information on generating green power on-site, see Section 7.2, *On-site Renewable Energy Generation*.

7.1.2 Benefits of Green Power Procurement

Green power procurement can produce significant energy, environmental, economic, and other benefits by helping local governments:

- Demonstrate leadership.* Public awareness of the benefits of green power is generally high, meaning green power procurement can be an effective way for local governments to demonstrate community leadership and spur private investments. Many local governments are leading community efforts to purchase green power. In Lincoln City, Oregon, for example, the local government is leading by example by purchasing green power to supply 6% of the electricity used in its facilities (U.S. EPA, 2007). More than 7% of the community's electricity customers have followed by committing to purchasing a percentage of their electricity from green power. Combined with the local government's purchase, this commitment has made the city a certified EPA Green Power Community (Newport News, 2007).
- Purchasing Green Power for Highly Visible Local Government Facilities**

Many local governments have found that purchasing green power for facilities that are frequented by the public can raise community awareness of local government leadership and clean energy benefits. Lacey, Washington, for example, is using green power in its city hall, public library, local museum, public works operations center, and its parks and recreation centers. In issuing a challenge to local businesses and residents to increase their purchases of green power, the city has referred them to local government successes.

Source: Lacey. 2007.
- Hedge against financial risks.* Because green power is not as sensitive to market fluctuations and supply limitations as fossil fuel-based electricity, purchasing green power reduces a local government's susceptibility to fossil fuel price volatility.² Since green power is produced from renewable energy sources, it can often be purchased at a more stable (and sometimes fixed) price over the long term (U.S. EPA, 2004; NYSERDA, 2003). The city council of Austin, Texas issued a resolution that directed its municipal electric utility to adopt a risk management strategy that ensured the utility would invest in long-term renewable energy and energy conservation programs (Austin Energy, 2003). To hedge against rising fuel prices and to provide better rates for its customers, the utility signs long-term contracts (the most recent contracts have been for 12 years and ten years) with its green power providers (Austin Energy, 2007).
 - Reduce greenhouse gas (GHG) emissions and other environmental impacts.* Purchasing green power reduces GHG emissions and emissions of pollutants associated with conventional electricity generation. Fossil fuel combustion for electricity generation accounts for 40% of the nation's CO₂ emissions, a principle GHG (U.S. EPA, 2008b). Many local governments have committed to purchasing green power as a primary strategy for meeting

² Anticipation of federal and/or state legislation that could impose caps on GHG emissions also has the potential to exacerbate the volatility of fossil fuel prices (U.S. EPA, 2004).

their GHG emission reduction goals (U.S. EPA, 2004). The Philadelphia Local Action Plan for Climate Change, for example, includes a commitment to obtain 100% of the city government's electricity from wind as a way to help reduce its GHG emissions to 1990 levels by 2010 (Philadelphia, 2007).

In addition to reducing emissions of GHGs, purchasing green power, which produces little or no toxic emissions, is a way of reducing the air quality impacts of electricity consumption (U.S. EPA, 2007e). Fossil fuel combustion for electricity generation also accounts for 67% of the nation's SO_x emissions and 23% of the nation's NO_x emissions, both of which can lead to smog and acid rain, and results in emissions of trace amounts of airborne particulate matter that can cause respiratory problems for many people (U.S. EPA, 2008b).

Green Power Implications for Air Quality

Some local governments cite air quality concerns as a primary driver for committing to green power. In Pennsylvania, 23 local governments have signed on to the Pennsylvania Clean Energy Communities Campaign, which helps local governments commit to purchasing 20% green power by 2010 and encourage 7% of their businesses and residents to commit to purchasing green power. One of the goals of this campaign is to improve regional air quality.

In Swarthmore Borough, a campaign participant, 26% of all households have committed to purchasing green power. Overall, the community meets approximately 10% of its consumption with green power. This accomplishment has led to the borough's qualification as an EPA Green Power Community.

Sources: Smart Power, 2007; U.S. EPA, 2007f; Swarthmore, 2007.

- *Increase economic benefits through job creation and market development.* Purchasing green power can lead to increased regional employment. When renewable energy generation facilities are sited close to the end user, local jobs are created to install and operate renewable energy generation facilities (U.S. EPA, 2004; IREC, Undated; Apollo, 2007). Manufacturing, constructing, installing, and operating and maintaining 1 MW of solar photovoltaic panels, for example, can create as many as 22 jobs, with 15 of these coming from manufacturing alone (Apollo, 2007; REPP, 2005).

Many local governments are using their purchasing power to support regional and state manufacturing sectors by specifying green power developed in-state or within a particular region. In a resolution presented to the city council, the mayor of Ann Arbor, Michigan called for the city government to meet 30% of its electricity demand using wind power generated by turbines manufactured in Michigan (Ann Arbor, 2006). The municipal electric utility in Austin, Texas contracts for its green power specifically from in-state resources, including wind power producers in McCamey and Sweetwater and solar power producers in San Antonio (Austin Energy, 2007).

- *Achieve regional and national benefits.* In addition to the local and regional benefits of purchasing green power, local governments can help achieve national-scale energy benefits by increasing the amount of green power in the country's energy portfolio. This reduces dependence on imported fossil fuels and diversifies the nation's fuel resources, which can improve the overall robustness of the country's energy systems by reducing the country's dependence on a vulnerable, centralized energy delivery infrastructure (U.S. EPA, 2004).

7.1.3 Energy Supply Measures

Three types of green power products are available to local governments and the businesses and residents in their communities:

- *Utility Products.* Many local governments purchase green power directly from their electricity provider. These purchases are often supplied as a fixed percentage of monthly use. Some local governments purchase green power in fixed-quantity blocks (e.g., a 100 kWh block of green power). Myrtle Beach, South Carolina, for example, is meeting 4.4% of its electricity demand by purchasing 155 blocks of green power of 200 kWh each. The city pays a premium of 2.9¢ per kWh of green power (DSIRE, 2007b).
- *Renewable Energy Certificates (RECs) Purchasing.* RECs (also known as green tags, green energy certificates, or tradable renewable certificates) represent the technological and environmental attributes of electricity generated from renewable sources. When renewable energy is generated, the RECs may be separated from the physical electricity and sold as a distinct product. Separating RECs from physical electricity makes the physical electricity effectively “null” (i.e., environmentally equivalent to conventional power). RECs can be purchased directly from the renewable electricity generator or through several types of REC providers, including retail and wholesale REC marketers (e.g., utilities, non-profits, or other environmental foundations) and REC brokers (U.S. EPA, 2004; WRI, 2003).

Selling RECs as a separate product has the benefit of creating green power opportunities for electricity customers in areas that lack access to utility products and can create additional supply and cost options for customers with access to utility products. In Montgomery County, Pennsylvania, the county’s electric utility was able to meet only 5% of the county’s electricity demand with green power. The county decided to supplement this utility product purchase with a REC purchase equal to 95% of its demand, enabling the county achieve a combined purchase of 100% green power (DSIRE, 2007f).

Purchasing RECs also has the benefit of enabling customers to maintain existing procurement relationships with electricity providers, and providing customers in leased spaces (where

What is a Renewable Energy Certificate (REC)?

At the point of generation, green power can be sold directly to the customer or separated into its two components: physical electricity and the technological and environmental attributes. When separated, the technological and environmental attributes associated with renewable energy are sold as renewable energy certificates (RECs). The physical electricity, no longer “bundled” with the technological and environmental attributes, is sold through the grid indistinguishable from electricity generated from conventional sources.

Source: U.S. EPA, 2007

Benefits of Purchasing RECs

- RECs create green power opportunities for electricity customers in areas that lack access to utility products and can create additional supply and cost options for customers with access to utility products.
- RECs enable customers to maintain existing procurement relationships with electricity providers.
- RECs provide green power opportunities for customers in leased spaces where landlords control electricity purchases.
- REC purchasers can specify the green power source type and location from which the RECs are derived.
- RECs may have a lower cost premium than green power purchased directly from the utility.

landlords control electricity purchases) with green power purchase options. Local governments can also specify the renewable energy source type and location from which the RECs come. In 2007, for example, Evanston, Illinois, signed a 17-month contract to offset 20% of the city's electricity consumption with a purchase of 5.5 million kWh of RECs from electricity produced by in-state wind turbines (DSIRE, 2007; Constellation NewEnergy, 2007). Similarly, when Dallas, Texas committed to purchasing RECs for the equivalent of one-half the electricity required to power its city-owned streetlights, the city specified that the RECs must come from Texas-based renewable energy generation sources (U.S. DOE, 2007b).

- *On-site Generation.* Many local governments generate green power at their own facilities. Generating green power on-site can be especially beneficial for local governments with facilities that are especially sensitive to the risks of fuel supply disruptions and electricity blackouts (e.g., hospitals) (U.S. EPA, 2004). In certain states, net metering rules allow excess green power generated on-site to be sold to a local utility for distribution to grid-connected customers. Hayward, California, which operates a 276 kW photovoltaic array on one of its facilities, sells the electricity and RECs from the excess green power it generates (Hayward, 2005). For more information on on-site generation, see Section 7.2, *On-site Renewable Energy Generation*.

7.1.4 Key Participants

A number of participants can be key in planning and implementing local green power procurement activities, including:

- *City or County Councils.* Local city and county councils, or comparable legislative bodies, often initiate or authorize green power procurement activities. The Suffolk County, New York legislature, for example, enacted two bills in 2005 requiring the local government to purchase green power. The first bill required the county to immediately purchase 5% of its electricity through the Long Island Power Authority's Green Choice Program; the second bill required the county to purchase a total of 25% of its electricity from green power sources by 2010 (DSIRE, 2007c).
- *Mayor or County Executive.* The mayor or county executive can provide increased visibility for green power procurement activities. In many local governments, the mayor or county executive has been the driving force behind an initiative to increase use of green power throughout the community. In Ann Arbor, Michigan, for example, the mayor drafted and presented to the city council a resolution establishing a goal that 20% of local government electricity demand be met with green power by 2015 (Ann Arbor, 2006).
- *Energy Coordinator.* Some local governments, such as Ann Arbor, Michigan, employ an energy coordinator who monitors local government energy use. An energy coordinator can provide assistance in gathering energy data, selecting green power products, aggregating agency purchasing accounts, installing on-site renewable energy generation systems, and quantifying and communicating the benefits of green power procurement (Ann Arbor, 2007).

- *Planning Staff.* Local planners can provide insight into how green power fits into existing local government and community-wide development plans. Many local government planning departments are responsible for local energy-related activities, including developing energy plans. A number of local governments have included green power procurement as a feature of their energy and climate action plans. The Worcester, Massachusetts Climate Action Plan, for example, includes a proposed measure that would require the local government to purchase \$25,000 in RECs to help meet its goal of purchasing 20% green power by 2010 (Worcester, 2006).
- *State Energy Offices.* State energy offices can provide local governments with information on incentives for purchasing green power, offer expertise to arrange green power purchases tailored to community needs and interests, and assist local governments in working with utilities to obtain optimal green power rates. The Oregon Energy Office, for example, provides local governments with technical assistance for renewable energy and energy efficiency projects and offers low-interest loans for clean energy investments, including on-site renewable energy generation system installation (Oregon, 2007).
- *Local Businesses and Residents.* Many local governments have enhanced the energy, environmental, and economic benefits of green power procurement by engaging local businesses and residents. As of January 2008, eleven communities had joined the EPA Green Power Communities program, an initiative that recognizes communities where local governments and their businesses and residents collectively purchase quantities of green power that meet EPA-determined requirements (U.S. EPA, 2007). Many local governments have expanded their green power procurement activities to provide incentives and encouragement for businesses and residents to purchase green power.
- *Utilities.* Local governments often work closely with utilities to purchase green power. Utilities can assist local governments in consolidating multiple local government electricity accounts into master agreements. In some instances, local governments can negotiate long-term contracts with utilities to obtain reduced green power rates. Local governments can also work with utilities to engage the public and encourage green power procurement by local businesses and residents. In Fort Collins, Colorado, for example, the city government coordinates with the local utility to provide information to customers on green power procurement opportunities through various media, including utility bills, the Internet, newsletters, mailings, and advertisements (ICLEI, 2005).
- *Green Power Marketers.* Green power marketing refers to selling green power in the competitive market. Electricity markets have been deregulated in more than a dozen states, allowing retail and wholesale green power marketers to compete to provide green power to customers. In states that allow competitive electricity markets, local governments can choose

Community-wide REC Programs

In addition to purchasing RECs to offset their own energy demands, local governments can establish programs that encourage residents and local businesses to purchase RECs. The municipal electric utility in Ashland, Oregon, for example, purchases RECs from a REC marketer to be sold to municipal utility customers. The REC marketer has agreed to direct a portion of its revenue from the REC sales to be invested in local renewable energy projects, such as solar PV installations and educational programs for Ashland students.

Source: Ashland, 2007.

to switch from standard electricity service to an alternative electricity service offered by a green power marketer (U.S. DOE, 2007d). Houston, Texas, for example, has agreed on a five-year fixed price contract with a green power marketer to procure up to 700 million kWh of green power annually, approximately one-half of the total electricity required to power the city's buildings, street lights, and municipal water plants. The city is currently purchasing 263 million kWh of green power annually (roughly 20% of total electricity) (U.S. DOE, 2007c).

- *Renewable Electricity Generators, REC Marketers, and REC Brokers.* Local governments have several options for purchasing RECs. RECs can be purchased directly from the renewable electricity generator or indirectly through REC providers, which include REC marketers and REC brokers. Many local governments have purchased RECs through retail and wholesale REC marketers, such as utilities, non-profit organizations, and environmental foundations. Hartford, Connecticut, for example, has partnered with two REC marketers to purchase a combined 8.6 million kWh of RECs, enough to offset 20% of the city's electricity use (U.S. DOE, 2006b). REC brokers can help facilitate transactions between local governments and renewable electricity generators by matching a local government's specific REC needs with an appropriate seller. In addition, REC brokers can often structure the agreement to avoid some of the transaction charges that local governments would have to pay if the RECs were purchased from a retail marketer (U.S. EPA, 2004; WRI, 2003).
- *Non-Profit Organizations and Community Groups.* Local governments sometimes work with non-profit organizations to tailor green power procurement activities to meet community needs. Aspen City and Pitkin County, Colorado, for example, received assistance from a non-profit organization that promotes clean energy to procure 5.75% of its municipal utility's electricity from a new wind farm in Nebraska (DSIRE, 2006b). Smart Power, a non-profit organization dedicated to promoting clean energy, has established community clean energy campaigns in Connecticut and Pennsylvania. These campaigns encourage local governments to commit to purchasing 20% green power by 2010 and to work with local businesses and residents to meet targets for green power procurement at the community scale (Smart Power, 2007c).

7.1.5 Mechanisms for Implementation

Local governments have used several mechanisms to establish green power procurement policies and to create incentives for local businesses and residents, including:

- *Executive Initiatives.* Mayors and county executives have used executive orders to direct resources towards purchasing green power products. In Lansing, Michigan, the mayor issued an executive order in 2007 that established a renewable portfolio standard requiring 10% of the local government's energy demand to be met with renewable energy by 2010, increasing to 15% by 2015 and 20% by 2020 (Lansing, 2007).

Mayors and county executives have established green power initiatives by challenging the community to meet green power goals. In Ann Arbor, Michigan, the mayor established a Green Energy Challenge, calling for 20% use of green power in city government operations by 2010 and in the city's residential and commercial sectors by 2015. This goal was later raised to 30% and was codified in a unanimously-approved city council resolution (Ann Arbor, 2007). In April 2007, the mayor of Ogden City, Utah established a Blue Sky Community Challenge to encourage 5% of the city's businesses and residents to commit to purchasing green power, at a cost premium of \$1.95 for each 100 kWh of green power. The program is expected to reduce the city's CO₂ emissions by more than 5,900 tons per year (Ogden City, 2007).

In Austin, Texas, the mayor's Climate Protection Plan, adopted by the city council in 2007, requires city facilities to obtain 100% green power by 2012 (DSIRE, 2007d). In a September 2007 announcement, the city's municipal electric utility committed to purchasing electricity from an additional 225 MW of wind power capacity by December 2008 (100 MW of capacity would be reserved for the city's facilities) (U.S. DOE, 2007f).

Steps for Purchasing Green Power

1. *Identify key decision makers.* Local governments can increase the effectiveness of a green power procurement policy by combining the needs of a range of stakeholders to ensure broad support for a project.
2. *Gather energy data.* By conducting an inventory of energy use, local governments can identify where green power purchases produce the greatest benefits and determine how much green power to purchase.
3. *Choose green power options.* Local governments can assess their options and eliminate green power products based on feasibility considerations, such as quality and supply of wind or solar resources.
4. *Collect product information.* Before purchasing green power products, local governments can obtain information and technical assistance from green power marketers, REC vendors, federal and state governments, other local governments, and various other resources.
5. *Create a procurement plan.* Local governments can enhance the effectiveness of a green power procurement policy by developing a clear plan that identifies the project's scope, expected benefits, procurement and financing methods, and implementation guidelines.
6. *Capture the benefits.* Local governments can ensure the effectiveness of green power procurement policies by tracking, evaluating, and reporting the benefits of green power.

Source: U.S. EPA, 2004.

- *Resolutions Committing Local Governments to Purchasing or Producing Green Power.* Many local government city and county councils have passed resolutions establishing green power procurement requirements for government facilities. These requirements often take the form of specified percentages of green power that the local government must use on an annual basis. In Multnomah County, Oregon, for example, the county board passed a resolution authorizing county departments to purchase 1% of their electricity from green power resources (Multnomah 2000). In 1999, the Austin, Texas city council adopted a resolution that established a goal for its municipal electric utility, Austin Energy, to supply 5% of the energy in its portfolio with energy from renewable resources by 2004. When a local government is required to seek lowest-cost options, city councils may need to authorize green power procurement if a cost premium is involved (U.S. EPA, 2004).
- *Local Renewable Portfolio Standards.* Many states have established renewable portfolio standards for investor-owned utilities. These rules require utilities to meet a certain percentage of their energy supply with energy from qualified renewable sources. Some local

governments have adopted comparable requirements for municipally-owned utilities. In Columbia, Missouri, for example, residents approved an ordinance that requires the municipal water and electric utility to purchase increasing levels of renewable energy, beginning with 2% by 2008, 5% by 2012, 10% by 2017, and 15% by 2022 (Columbia, 2007). In 1999, Seattle, Washington adopted a resolution requiring its municipal utility to reserve approximately 0.5% of its annual revenues (approximately \$2 million annually) to purchase energy from renewable resources (City Light, 2002; Seattle, 1999).

7.1.6 Implementation Considerations

Local governments have used a number of approaches to enhance the effectiveness of local green power procurement activities, including:

- *Aggregate demand for green power with other jurisdictions.* Some local governments have contracted for green power at reduced electricity rates and transaction costs by aggregating electricity purchases. Local governments can also use aggregated purchasing power to encourage utilities to provide green power, especially in deregulated markets (NREL, 2001; LGC, Undated). Aggregation can take several forms, including:

- *Aggregation with other local governments and community organizations.* Local governments can aggregate purchases with other local governments and community organizations by working within existing associations or forming new ones. The Association of Bay Area Governments in California, for example, formed a third-party agency to administer scheduling and billing services for a pool of 59 cities, counties, and public agencies with a combined peak load of 63 MW. The group is purchasing 35% of its electricity from green power sources (NREL, 2001).

New York State Wind Buyers Group

The New York State Municipal Wind Buyers Group is comprised of 56 municipalities that have aggregated demand to achieve reduced prices for green power. The group of towns and villages, which each specify a different amount of green power, is currently purchasing nearly 32 million kWh of RECs per year, about 20% of total electricity demand for the group's members. The group has used various media, including municipal conferences, news releases, and websites, to share its experiences. Some of the group's members are working on an "adopt-a-turbine" program to encourage local residents and businesses to purchase wind power.

Source: U.S. EPA, 2007g.

- *Community Choice.* Communities in California, Ohio, and Massachusetts have adopted resolutions authorizing a Community Choice Aggregation (CCA) model, which authorizes local governments to aggregate the purchases of businesses, residents, and municipal facilities that opt-in to the program. This arrangement enables local governments to make decisions about electric services on a community scale, which can lead to reduced rates. San Francisco, California is using energy savings from its CCA contract to invest in renewable energy generation projects (LGC, Undated; San Francisco PUC, 2005). The Cape Light Compact, a regional energy services organization that serves 21 towns in eastern Massachusetts, has established a CCA program that allows compact customers to purchase either 50% or 100% of their electricity from green power sources, with 25% of the proceeds being directed to development of new renewable energy generation sources (CLC, 2007).

- *Engage the community.* In addition to purchasing green power for their own facilities, local governments have used a variety of approaches to encourage local businesses and residents to purchase green power to achieve increased community-wide benefits, including:
 - *Challenge local businesses and residents.* A number of local governments have challenged commercial and residential electricity customers to meet green power purchase targets. Park City, Utah, for example, committed to purchasing 7.5% green power for its facilities and operations. The city pledged to increase that purchase to 10% if 5% of the community enrolled in the local utility's green power program or if the community met the EPA Green Power Communities requirement of obtaining 2% of its total electricity from green power. As of January 2008, the community had met both of the city's challenges, making Park City an EPA Green Power Community (U.S. EPA, 2008; Park City, 2007).

Boulder, Colorado Community Challenge

In 2005, the Boulder, Colorado Office of Environmental Affairs announced the Wind Power 500 Challenge, a program to encourage residential and commercial municipal electric utility customers to enroll in the utility's wind power program. The goal for the Challenge was for 500 new customers to enroll in the program over a two-month period. After two months, the program had more than doubled its enrollment goal, gaining 1,150 new customers.

Source: Boulder, 2005; Boulder, 2005b.
 - *Enter competitions with other local governments.* Some local governments have found that competitions can help increase community awareness of the benefits and availability of green power. Swarthmore and Media, Pennsylvania, for example, competed in 2007 to see which community could be the first to have 200 households commit to purchasing green power. Through a statewide clean energy program, communities that achieve this mark receive a free 1 kW photovoltaic system. Swarthmore, which reached the goal first, reached a participation rate of 26% of all households in the community, with the result that more than 10% of the community's electricity needs are met with green power (Swarthmore, 2007).
 - *Provide incentives for residential and commercial green power purchasers.* A number of local governments offer incentives to local businesses and residents that commit to purchasing green power. Through its Clean Energy Rewards program, Montgomery County offers rebates to businesses and residents that purchase green power or RECs. Residential consumers receive 1¢ per kWh of green power purchased, while non-residential consumers receive 1.5¢ per kWh (Montgomery County, 2007). In Austin, Texas, the municipal electric utility offers businesses and residents the option of purchasing green power through its GreenChoice program. The customer's purchase rate is fixed for a 10-year period, meaning benefits for the customer will increase over time as conventional electricity prices increase (Austin Energy, 2007).
- *Negotiate terms of green power purchases.* When selecting green power products and making green power purchases, local governments often establish product and purchase criteria that reflect local government- or community-specific preferences (e.g., a preference for green power to be generated locally). Local governments can ensure that the terms of green power procurement contracts meet these criteria through several approaches (e.g.,

including the criteria in a request for proposals (RFP). Specifically, local governments can take the following actions:

- *Negotiate with utilities.* In communities where the local utility offers green power products, local governments can negotiate modifications to existing purchase agreements in accordance with local green power goals or requirements. If the utility does not offer green power products, local governments may be able to generate enough demand to encourage the utility do so (U.S. EPA, 2004). In addition, local governments can work with utilities to have revenues raised from green power purchases reinvested in other community clean energy activities. Clark County, Washington, for example, has committed to purchasing 10% of its electricity through the Clark Public Utilities' Green Lights program. A portion of the utility's revenues from green power sales are reinvested in renewable energy projects in the county (Clark County, 2002).
- *Request proposals.* A number of local governments have used competitive sourcing policies to require that electricity services meet their commitment to green power (IREC, Undated). Several local governments have structured RFPs so that respondents must include green power as a component of the proposed electricity delivery. In 2005, the city council of Portland, Oregon issued an RFP for a 100% renewable energy product to supply energy for all city departments by 2012 (Portland, 2007).
- *Require certification for green power products.* Local governments can require that green power providers have third parties certify that products meet consumer protection and environmental standards. Certification provides assurance that green power products reduce a local government's environmental impact, which can help secure buy-in throughout the community. Certification can also verify that green power product claims are valid (e.g., with respect to the mix of renewable energy resources) and that the products have not been repackaged (U.S. EPA, 2006; AWEA, 2004).³ Certification is conferred by a number of organizations, including the Center for Resource Solutions Green-e Renewable Energy Certification Program and the Environmental Resources Trust. The Environmental Resources Trust uses a power scorecard to rate and certify RECs (U.S. DOE, 2007e).

Drafting a Request for Proposals

To gather information from multiple green power product providers and to obtain the best price possible, local governments can issue an RFP that includes green power specifics, such as:

- The volume to be purchased.
- Duration of the purchase agreement.
- Types of renewable resources desired.
- Preferred location of renewable resources.
- Certification by a third party.
- Year of vintage (for RECs).
- Delivery start date.

Sources: WRI, 2006; U.S. EPA, 2004.

³ "Repackaging" refers to the concern that green power can be "repackaged" and sold as a mix of renewable energy that is already injected into the grid to satisfy legal mandates (e.g., through renewable portfolio standards) rather than to meet consumer demand. Repackaged renewable energy does not result in environmental improvement, since it merely sustains the status quo (AWEA, 2004). Renewables that are counted toward satisfying mandates can not be used to support purchasers' environmental claims.

When Westport, Connecticut committed to purchasing 100% green power in 2002, it became one of the first municipalities in the Northeast to require that its green power purchases be Green-e certified to demonstrate to the community and other local governments its commitment to using only energy from the cleanest power sources available (U.S. DOE, 2004).

- *Seek fixed-price, long-term contracts.* Because green power generation requires no fuel input and is not subject to fuel price volatility, it comes at a consistent cost to the generator, meaning customer prices remain relatively stable over time. Many local governments have entered into long-term purchase agreements with utilities or REC providers. While short-term contracts may offer greater future flexibility, long-term contracts can reduce a supplier's risk, which often translates into reduced rates (U.S. EPA, 2004; WRI, Undated). The mayor of Ann Arbor, Michigan drafted a resolution that called for the city to seek long-term, fixed-price contracts for the procurement of wind power. In May 2006, the mayor's proposed resolution was unanimously adopted by the city council (Ann Arbor, 2006).

The municipal electric utility of Austin, Texas, enters into 10-year contracts with its wind power supplier. This agreement has enabled Austin Energy to provide its residential and commercial customers with fixed rates for 10 years. This feature has made the program enticing to local businesses and residents, to the point where the utility had reached maximum subscription for the program in 2007 and had to secure additional green power generation sources before accepting more subscriptions in January 2008 (Austin Energy, 2008; Texas SECO, 2007).

7.1.7 Costs and Funding Opportunities

This section provides information on the costs of purchasing green power and describes funding opportunities for addressing these costs.

Costs

While green power procurement requires no up-front investment, it typically includes a small cost premium as a result of still-developing renewable energy technologies. Premiums depend on a number of factors, including the availability of subsidies, the terms of the contract with the provider, the size of the green power market, the proximity of the local government to the source, and the type and quality of the product.

Murray City, Utah – City-Owned Utility Purchases Renewable Energy

Murray City Power, a municipal electric utility, is purchasing electricity produced from a 3 MW capacity landfill gas project at the Salt Lake Valley Solid Waste Management Facility in Salt Lake City. The initiative, which provides a use for landfill methane, a potent greenhouse gas that would otherwise be released into the atmosphere, raised residents' electricity costs by less than \$0.50 per year.

Source: WAPA, 2005.

Green power premiums vary, with the national average green power premium being 2.12¢ per kWh in 2006, a decrease of 8% from the 2.36¢ per kWh average in 2005 (Bird et al., 2007).

Green power premiums can range as high as 3¢ per kWh, but in many places are much lower (U.S. DOE, 2007g). In Fort Collins, Colorado, the premium added to customer's rates for the

Platte River Power authority's wind program is 1¢ per kWh (Sierra Club, 2005). In Palo Alto, California, where the PaloAltoGreen program has encouraged over 16% of the community to purchase green power, the premium added to customers' electricity rates is 1.5¢ per kWh (Palo Alto, 2006). Bellingham, Washington, which has committed to purchasing 100% green power, spends \$250,000 per year for RECs, which equates to a premium of approximately 1¢ per kWh (Bellingham, 2006).

Because of the absence of barriers that impede competitive pricing of green power utility products, purchasing RECs to complement conventional electricity can be less expensive than purchasing green power directly from a utility. In some instances, REC prices can be as much as 90% less than the premium for green power utility products in regulated electricity markets and 80% less than the premium in deregulated electricity markets (WRI, 2003).

Funding Opportunities

Funding for local green power procurement activities can come from a variety of sources, including:

- *Savings from Energy Efficiency Investments.* Local governments can use cost savings from energy efficiency investments to offset the cost premium associated with purchasing green power. Radnor Township in Pennsylvania, for example, is using energy cost savings from installing energy-efficient light-emitting diode (LED) traffic lights to help offset the cost of purchasing green power to meet 62% of its electricity needs (U.S. DOE, 2003). Grand Rapids, Michigan has partnered with a utility to receive 20% green power from in-state renewable energy sources. The utility is assisting the city in offsetting the cost of participating in its green power program by performing energy audits in the city's facilities to identify opportunities to reduce energy consumption (Grand Rapids, 2007).

In addition, improving energy efficiency reduces a facility's energy load, meaning local governments can meet their percentage green power goals at lower costs. In Salt Lake City, Utah, energy efficiency retrofits in the City and County Building and the Main Public Library offset the cost premium of purchasing enough wind power to meet 21% of the buildings' energy demand (DSIRE, 2006a).

- *State Government Programs.* A number of states administer clean energy funds that can provide financial assistance to local government for green power procurement. Other state programs offer incentives for businesses and residents who invest in renewable energy and energy efficiency. The Massachusetts Renewable Energy Trust, which is funded by a systems benefit charge, administers a community grant program for clean energy. Through this program, local governments receive matching funds for renewable energy and energy efficiency projects. The value of the matching funds is determined by the amount of RECs purchased by the community's consumers. In the town of Northampton, matching funds are being used to install a 10 kW solar array at a public middle school (MTC, 2006).

Local governments can access information on state funding opportunities and incentives for energy efficiency and renewable energy projects by using the Database of State Incentives for Renewable Energy at www.dsireusa.org.

- *Federal Government Programs.* Local governments may be able to obtain financial assistance for purchasing green power through several federal government programs. Local governments can locate grants for clean energy projects from federal government agencies by searching the database of federal grants at www.grants.gov. In addition, the EPA Grants Office and DOE Office of Energy Efficiency and Renewable Energy provide information on additional funding opportunities, including grants, cooperative agreements, continuation awards, and renewal awards.

Madison, Wisconsin – Green Power for Metro Transit

In 2000, the Madison, Wisconsin Metro Transit agency purchased green power to meet 25% of its annual energy demand for its facilities, approximately 803,250 kWh. The total cost premium for this purchase, which was \$26,000 more than the cost of conventional energy, was reduced by more than 50% by federal and state transportation operations funds and rebates.

Source: ICLEI, Undated.

Web sites:

<http://www.grants.gov/> (All federal grant-issuing agencies)

<http://www.epa.gov/epahome/finance.htm> (EPA Funding Opportunities)

<http://www1.eere.energy.gov/financing/> (DOE Energy Efficiency and Renewable Energy)

7.1.8 Interaction with Federal, State, or Other Programs

A variety of federal, state, regional, and other agencies and organizations provide resources that local governments can use when planning and implementing green power procurement activities.

Federal Programs

Local governments can obtain information and assistance for green power procurement activities from several federal government programs, including:

- *U.S. EPA Green Power Partnership.* The EPA Green Power Partnership is a voluntary program to support the market for green power products. Local governments that meet partnership requirements earn publicity and recognition, and are ensured of the credibility of their green power purchases. In addition, partners can receive EPA expert advice on identifying green power products and purchasing strategies, and tools and resources to calculate the environmental benefits of green power purchases. The annual percentage requirements to qualify as a partner are as follows: 2% green power for entities using over 100 million kWh, 3% for between 10 million kWh and 100 million kWh, 6% for between 1 million kWh and 10 million kWh, and 10% for less than 1 million kWh.

Web site: <http://www.epa.gov/greenpower/>

- *U.S. EPA Green Power Communities.* The Green Power Communities program is an initiative of EPA's Green Power Partnership that recognizes communities where local governments and their businesses and residents collectively purchase quantities of green power that meet EPA-determined requirements. The percentages of green power purchased by these eleven Green Power Communities as of January 2008 range from 2% to 11% of total electricity consumption (U.S. EPA, 2005).

Web site: <http://www.epa.gov/greenpower/communities/index.htm>

- *U.S. EPA Clean Energy-Environment State and Local Program.* This program assists state and local governments in their clean energy efforts by providing technical assistance, analytical tools, and outreach support. It includes two programs:
 - The *Clean Energy-Environment Municipal Network* provides a resource network that supports local governments' efforts to use clean energy strategies to advance their community priorities.
 - The *Clean Energy-Environment State Program* supports state efforts to develop and implement cost-effective clean energy strategies that achieve public health and economic benefits. Through this partnership program, EPA provides technical assistance tailored to states' needs.

A key resource for both Clean Energy-Environment programs is the *Clean Energy Resources Database*, which provides planning, policy, technical, analytical, and information resources for state and municipal governments.

Web sites:

<http://www.epa.gov/cleanenergy/>

<http://www.epa.gov/cleanenergy/energy-programs/napee/resources/database.html> (Clean Energy Resources Database)

<http://www.epa.gov/cleanenergy/energy-and-you/affect/index.html>
(environmental impacts of renewable energy technologies)

- *U.S. DOE Green Power Network.* Local governments can obtain news and information on green power markets from the DOE Green Power Network. The Network's Web site provides information on green power providers, green power products, and federal, state, and local policies pertaining to green power markets, and contains an extensive library of papers, articles, and reports on green power.

Web site: <http://www.eere.energy.gov/greenpower/>

- *U.S. DOE. State Energy Alternatives Program.* The State Energy Alternatives program provides state and local policy makers with information on renewable energy and energy efficiency opportunities. The program provides assistance to local governments on technology and policy options and outlines the availability of different alternative energy resources in each state.

Web site: <http://www.eere.energy.gov/states/alternatives/>

- *National Renewable Energy Laboratory (NREL).* NREL is the primary national laboratory for renewable energy and energy efficiency research and development. NREL provides local governments with information on existing and emerging technologies, including how to plan, site, and finance projects using renewable energy sources. NREL also provides information

on developing rules and regulations for net metering and renewable portfolio standards for municipal utilities.

Web site: http://www.nrel.gov/learning/re_basics.html

State Programs

Local governments have obtained technical assistance and information resources from many state-administered programs. State energy offices and public utilities commissions (PUCs), in particular, can be helpful resources for local governments planning to purchase green power or developing community green power programs. The Connecticut Clean Energy Communities Program, which is sponsored by the Connecticut Clean Energy Fund, partners with communities throughout the state, offering technical assistance and incentives for renewable energy investments. For example, the program offers local governments a free 1 kW photovoltaic solar electric system for every 100 residential customers who sign up for the program's clean energy option (Smart Power, 2007).

Some states engage local governments in statewide challenges or initiatives to promote green power. In Illinois, for example, the lieutenant governor has asked local governments throughout the state to join state agencies in accepting the "3-4-5" challenge to buy 3% of energy needs from RECs in 2007, increasing to 4% in 2008, and 5% in 2009 (Illinois, 2007).

Other Programs

Other sources of information and assistance include:

- *Database of State Incentives for Renewables & Efficiency (DSIRE)*. A project of the North Carolina Solar Center and the Interstate Renewable Energy Council, DSIRE provides information on federal, state, and local incentives for renewable energy and energy efficiency projects, including tax credits, loans, and grants. The database also provides information on state and local regulations pertaining to renewable energy purchases and on-site renewable energy generation, including overviews of state and local net metering rules, renewable portfolio standards, and requirements for renewable energy use at public facilities.

Web site: <http://www.dsireusa.org/>

- *Green-e Renewable Energy Certification Program*. Developed by the Center for Resource Solutions, Green-e is a voluntary certification and verification program for wholesale, retail, and commercial electricity products, RECs, and utility green pricing programs. Green-e certifies about 100 retail and wholesale green power marketers across the country. In addition, Green-e sets consumer protection and environmental standards for energy-related products. Local governments can seek certification from Green-e as purchasers of certified renewable energy, for which Green-e provides a label that can be displayed in government facilities.

Web site: <http://www.green-e.org/>

- *Interstate Renewable Energy Council (IREC)*. IREC promotes deployment of renewable energy in state and local government activities by providing information and assistance to state and local governments for a number of renewable energy activities, including public education, procurement coordination, and adoption of uniform standards.

Web site: <http://www.irecusa.org/>

- *Renewable Energy Policy Project*. The Renewable Energy Policy Project, created by the Center for Renewable Energy and Sustainable Technology, was developed to accelerate the deployment of renewable energy technologies and serves as a clearinghouse for information on renewable energy technologies and policies.

Web site: <http://www.repp.org/index.html>

7.1.9 Case Studies

The following two case studies describe comprehensive programs for purchasing green power products for local government facilities and operations and supporting green power purchases throughout the community. Each case study describes how the program was initiated, key program activities and features, and program benefits.

Bellingham, Washington – Green Power Purchasing

Bellingham, Washington has become one of the nation's leading communities in green power procurement. In 2006, the city government committed to meeting 100% of its electricity demand with green power. The city has worked with local businesses and residents to increase green power purchases to 11% of community-wide electricity demand. These efforts have earned the city recognition as an EPA Green Power Community and a Green Power Leader.

Program Initiation

In 2002, the Bellingham city council passed a resolution endorsing the Earth Charter, an international statement that endorses use of renewable energy sources. This endorsement was followed by a 2005 resolution that committed the city as a participant in the ICLEI – Local Governments for Sustainability *Cities for Climate Protection* program. As a requirement for participation, the city developed an action plan for implementing measures that would reduce its GHG emissions. Also in 2005, the mayor signed the U.S. Conference of Mayors Climate Protection

Profile: Bellingham, Washington

Area: 28 square miles

Population: 75,000

Structure: The city is governed by a mayor and a six-member city council. Activities under the city's Cities for Climate Protection program are implemented by the Environmental Resources division in the Department of Public Works.

Program Scope: Bellingham is purchasing green power for 100% of its government operations electricity demand. The community, including local businesses and residents, is purchasing 11% green power.

Program Creation: A city council resolution in 2006 committed the city to purchasing 100% green power for 2007, endorsed the Bellingham Green Power Community Challenge, and authorized participation in the EPA Green Power Partnership.

Program Savings: The Bellingham community is purchasing a total of 76 million kWh of green power annually. The city government's purchase of 100% green power (accounting for 25 million kWh) has reduced city government CO₂ emissions by 13,000 tons annually (approximately 65%).

Agreement, which establishes goals for local governments to increase use of “clean, alternative energy” sources and encourage development of renewable energy resources. In 2006, the city council passed Resolution 2006-28, which committed the city government to purchasing RECs equal to 100% of its electricity consumption in 2007 (Bellingham, 2002; 2005; 2006b; 2007).

Program Features

Bellingham’s green power procurement program includes the following features:

- *ICLEI Cities for Climate Protection.* In a 2005 city council resolution, Bellingham committed to participating in the ICLEI Cities for Climate Protection program. As required for program members, the city developed an inventory of its GHG emissions and drafted a climate action plan. The inventory revealed that government operations account for greater than 2% of the community’s total GHG emissions. Purchasing green power is a primary feature of the city’s action plan (Bellingham, 2005; 2007).
- *City Council Resolution.* City Council Resolution 2006-28 was the primary mechanism for implementing the city’s green power procurement program. Under this resolution, the Bellingham city government endorsed the Bellingham Green Power Community Challenge, authorized the mayor to enter the city as a participant in the EPA Green Power Partnership, and committed the city government to purchasing RECs equal to 100% of its electricity consumption (about 25 million kWh annually). The cost premium of purchasing this quantity of green power was expected to be \$250,000 for 2007 (Bellingham, 2006; 2006b).
- *Greenhouse Gas Emissions Reduction.* The Bellingham City Council passed a resolution in 2007 committing to reduce GHG emissions resulting from government operations by 64% below 2000 levels by 2012 and 70% by 2020. These targets were based on the fact that electricity consumption accounts for approximately 60% of all GHG emissions from city government operations and that by purchasing 100% green power the city reduced 2007 government GHG emissions by approximately 60%. The city has also established a community-wide goal to reduce emissions resulting from all community activities by 7% below 2000 levels by 2012 and by 28% by 2020 (Bellingham 2006b; 2007; 2007c).
- *Green Power Community Challenge.* Bellingham partnered with a non-profit organization to encourage local businesses to participate in the Bellingham Green Power Community Challenge, with a goal of increasing the total amount of green power purchased in Bellingham to 2% green power. The non-profit, which consists of more than 600 businesses and community members in northwest Washington, used its membership to reach out to a large number of potential green power purchasers. Participation by the Bellingham community reached a total of nearly 2,000 households and more than 100 businesses, and the city successfully met and exceeded its 2% target. The city awarded \$1,000 for neighborhood improvement projects to the neighborhood that achieved the highest percentage of households participating in the challenge (Bellingham, 2006b; 2007d; Sustainable Connection, 2007b).
- *EPA Green Power Community.* Bellingham has been recognized as a Green Power Community by the EPA Green Power Partnership. As a Green Power Community, the city

has met green power purchase requirements for its own facilities and a target for total green power purchased by the community, including the city government, businesses, residents, and non-profit organizations.

- *Utility Partnership.* Bellingham has benefited from a close relationship with its electric utility. As a reward for the city's successful facilitation of the Green Power Community Challenge, the utility offered to pay for the installation of a 2.4 kW photovoltaic system on a local public facility and announced that it would contribute \$20,000 for a future renewable energy generation project. The utility has benefited from the challenge as well, with the significant amount of green power purchases from the community enabling it to purchase green power in bulk at reduced rates. These rate reductions have lowered the price premium that local businesses and residents pay for their green power by about 40% (Bellingham, 2007d; Sustainable Connections, 2007b).

Program Benefits

Bellingham's goal for the Green Power Community Challenge was for the entire community to collectively commit to purchasing at least 2% green power. The city exceeded this goal: as of January 2008, the community was purchasing 76 million kWh of green power annually (25 million kWh by the local government), or greater than 11% of total community electricity use. The city believes this will reduce annual GHG emissions equivalent to the amount produced by 10,000 cars in one year. This achievement has made Bellingham the EPA Green Power Community with the highest percentage participation and earned it the receipt of the EPA 2007 Green Power Leadership award (Bellingham, 2007b; 2007d; Sustainable Connections, 2007b).

Web site: <http://www.cob.org/services/environment/green-resolutions.aspx>

Montgomery County, Maryland – Green Power Purchasing

By combining aggregated purchase agreements with green power purchasing, Montgomery County, Maryland has achieved substantial energy and environmental benefits. Its current aggregated purchase includes enough wind power to supply approximately 7% of the county government's electricity (U.S. EPA, 2008).

Program Initiation

In 2000, Montgomery County partnered with multiple jurisdictions to aggregate electricity purchases to obtain reduced rates. In 2003, the county executive and county council approved a resolution to amend the county's Energy Policy to require all county departments to obtain 5% of their electricity from green power and for the county to pursue cost-saving opportunities to aggregate purchases. In 2004, the county partnered with multiple local jurisdictions to finalize a two-year contract that would provide nearly 40 million kWh of wind power per year, thus enabling the county to meet 5% of its departmental electricity needs with renewable energy. In 2006, the buying group renewed this contract and increased the total amount of wind power to nearly 56 million kWh annually which led the county to raise its green power target from 5% to 10% (DSIRE, 2007e; Montgomery County, 2008). In fiscal year 2008, the buying group is purchasing 65 million kWh of wind power, and the county has set a goal of doubling its green power purchase percentage to 20% by 2011 (U.S. EPA, 2008).

Program Features

Montgomery County's green power purchasing program includes the following features:

- Aggregated Demand.* Aggregating the demand of multiple electricity customers can help leverage purchasing power, enabling local governments to obtain reduced electricity rates as opposed to purchasing on individual contracts. When Montgomery County made its original aggregated purchase in 2000, it partnered with Montgomery County Public Schools, the county Housing Opportunities Commission, Montgomery College, the Washington Suburban Sanitary Commission, and the Maryland-National Capital Park and Planning Commission. In 2005, six Montgomery County agencies formed a new buying group with eleven municipalities and neighboring Prince Georges County to aggregate demand for green power (DSIRE, 2007e).
- Green-e Certification.* In accordance with the county Energy Policy, the wind power the county purchases must meet Green-e certification for environmental claims (Montgomery County, 2003).
- Multi-Year Contract.* The purchasing group agreed to a two-year fixed-rate contract in 2004 to purchase 38 million kWh annually (Montgomery County, 2004). In 2006, this contract was renewed for an additional three years (Montgomery County, 2006).
- “Energy-Wise Offices.”* The 2003 Montgomery County Energy Policy created the “Energy-Wise Offices,” program encourages county employees to implement energy conservation practices that complement the county's green power purchases (Montgomery County, 2003).
- Financial Incentives for Businesses and Residents.* Through its Clean Energy Rewards program, Montgomery County offers rebates to businesses and residents that purchase green power and RECs, or install photovoltaic solar power generation systems at their homes and buildings. Residential consumers receive 1¢ per kWh of green power purchased, while non-residential consumers receive 1.5¢ per kWh. The county Department of Environmental Protection estimates that its community incentives reduce the cost premium of purchasing green power by approximately 40% (Montgomery County, 2007).
- Public Awareness.* The Montgomery County Department of Environmental Protection Web site provides businesses and residents with information resources about purchasing green power. Information includes comparisons among the green power provider options available

Profile: Montgomery County, Maryland

Area: 500 square miles

Population: 962,000 (2007 estimate)

Structure: The county is governed by a county council and a county executive. The county's green power purchases are coordinated by the Department of Public Works and Transportation. The Clean Energy Rewards program is administered by the Department of Environmental Protection.

Program Scope: Montgomery County aggregates green power purchases with 17 other public jurisdictions. In addition to purchasing green power for its own facilities and operations, the county administers a Clean Energy Rewards program that promotes green power in the residential and commercial sectors.

Program Creation: In 2003, the county passed a resolution requiring all departments to obtain at least 5% of their electricity from renewable energy.

Program Savings: A three-year extension of the county's aggregated green power purchase is expected to save the county and its aggregation partners a combined \$25 million compared to the cost of purchasing separately.

to the county's electricity customers. The Department has also developed a Clean Energy Rewards electronic newsletter that it periodically delivers to program subscribers (Montgomery County, 2007).

Program Benefits

The county's aggregated demand purchase in 2000 saved the county approximately \$5.4 million in electricity costs (compared to purchasing separate from the buying group) over 3.5 years. The 2004 purchase was expected to reduce the county's CO₂ emissions by nearly 20,000 metric tons, and avoid 95,000 pounds of NO_x and 1.4 pounds of mercury pollution. The 2006 extension of the aggregated purchase agreement is expected to save nearly \$25 million in procurement costs over three years for the 18 jurisdictions in the pool. These procurement savings will be used to offset the cost of increasing the buying group's percentage purchase of wind power from 5% to 10% (Montgomery County, 2004; Montgomery County, 2006; DSIRE, 2007e).

Web site:

<http://www.montgomerycountymd.gov/deptmpl.asp?url=/content/dep/Energy/home.asp>

Resources

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Examples of Green Power Procurement by Local Governments	
Ann Arbor, Michigan. Ann Arbor has established a goal of obtaining 30% of its energy needs from renewable sources by 2010.	http://www.ci.ann-arbor.mi.us/PublicServices/SystemsPlanning/Energy/EnergyChallengeAction.html
Apache Junction, Arizona. Apache Junction is supplying 50% of its city hall electricity demand with green power.	http://eere.energy.gov/state_energy_program/project_brief_detail.cfm/pb_id=1222
Aspen, Colorado. The city has established a goal to purchase 75% of its electricity from renewable sources by the year 2010.	http://www.dsireusa.org/library/includes/GenericIncentive.cfm?Incentive_Code=CO19R&currentpageid=3&EE=1&RE=1
Austin, Texas. The city council has adopted a renewable portfolio standard for Austin Energy, requiring the utility to supply 30% of its energy portfolio with energy from renewable sources by 2020.	http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX11R&state=TX&CurrentPageID=1&RE=1&EE=1
Bellingham, Washington. The city of Bellingham has committed to purchasing 100% of its 2007 energy demands from green power sources.	http://www.cob.org/features/2006-07-31-green-power.htm
Boston, Massachusetts. In 2007, Boston's mayor issued an executive order requiring city departments to purchase 11% renewable energy immediately, increasing to 15% by 2012.	http://dsireusa.org/library/includes/GenericIncentive.cfm?Incentive_Code=MA12R&currentpageid=3&EE=1&RE=1
Caroline, New York. Caroline, New York began purchasing green power to offset 100% of its electricity demand in 2005.	http://www.epa.gov/grnpower/partners/partners/townofcarolineny.htm

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Clark County, Washington. Clark County is purchasing 10% of its electricity from renewable energy sources through its municipal utility's Green Lights program. The county's purchase of 120,600 kWh costs approximately \$1,809 per month.	http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code = WA10R&state = WA&CurrentPageID = 1
Columbia, Missouri. Columbia passed an initiative in 2004 that established a renewable portfolio standard for the city's municipal water and electricity utility.	http://www.gocolumbiamo.com/WaterandLight/Documents/2007renewableenergyreport.pdf
Dallas, Texas. Dallas, an EPA Green Power Partner, is purchasing 40% of its electricity from green power sources.	http://www.dallascityhall.com/pdf/pi/leading_green_power.pdf
Durango, Colorado. In 2007, Durango became one of the first governmental entities in Colorado to commit to purchasing 100% green power for its municipal facilities and operations.	http://www.durangogov.org/news_detail.cfm?article = 1011
Erie County, New York. Erie County has coordinated an aggregated energy purchase that includes multiple county jurisdictions. The purchase has saved the county partners approximately 15% in energy costs, for a total savings of nearly \$3 million.	http://www.ase.org/content/article/detail/3293
Evanston, Illinois. Evanston has committed to purchasing RECs to offset 20% of its energy consumption in municipal facilities.	http://www.chicagodefender.com/page/local.cfm?ArticleID = 8441
Fairfax County, Virginia. Fairfax County has entered into a three-year contract to purchase wind energy. The quantity of the purchase will constitute 10% of the county's energy demand.	http://www.eere.energy.gov/greenpower/news/news_template.shtml?id = 1261
Houston, Texas. Houston has used a 5-year fixed price contract to purchase enough green power to provide for approximately one-third of its facility energy demand.	http://www.eere.energy.gov/greenpower/news/news_template.shtml?id = 1281
Lacey, Washington. Lacey is one of a handful of cities across the nation that is purchasing green power to supply 100% of its municipal electricity need. The city uses green power in its office buildings, parks and recreation areas, utilities, and streetlights and traffic signals.	http://www.ci.lacey.wa.us/press/releases/08-22-07.html
Lawrence, Kansas. Lawrence, Kansas, a Green Power Partnership member, is purchasing 3% green power through RECs.	http://web.ci.lawrence.ks.us/pipermail/eupdates/2007-April/000965.html
Madison, Wisconsin. The Madison Metropolitan Transit agency, the largest energy user in city government, has converted to 25% wind energy for its facilities.	http://www.greenpowergovs.org/wind/Madison%20case%20study.html
Moab, Utah. Moab has been purchasing 50% wind power for its city office since 2003. In 2006, the mayor challenged residents to commit to purchasing 5% green power.	http://www.moabcity.org/feature.cfm?id = 1152031362016
Multnomah County, Oregon. Multnomah passed a county resolution authorizing the procurement of green power in 2000.	http://www2.co.multnomah.or.us/Public/EntryPoint?ch = 4da0f4ba0fd7c010VgnVCM1000003bc614acRCRD&ct = 83e5df87476cc010VgnVCM1000003bc614acRCRD

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
New York City. The mayor of New York City has announced that beginning in 2008, 5% of the city's heating fuel purchases would consist of biofuels made from corn and soybeans, rising to 20% in 2012.	http://www1.eere.energy.gov/biomass/printable_versions/news_detail.html?news_id=11037
North St. Paul, Minnesota. The Green Power Choice program in North St. Paul offers customers 100 kWh blocks of renewable energy from hydropower (at \$1.75 per block) and wind (at \$2.50 per block).	http://www.ci.north-saint-paul.mn.us/index.asp?Type=B_BASIC&SEC=%7B23009FE0-DCE1-4330-BF8D-3E70E2C3E9E7%7D
Northbrook, Illinois. Northbrook is purchasing approximately 4.5 million kWh of RECs to offset approximately 45% of its electricity consumption.	http://www.northbrook.il.us/Services/Green_energy.php
Olympia, Washington. Olympia has committed to using green power to supply 100% of the energy demand for its drinking water, wastewater, and storm and surface water utilities in 2007.	http://www.ci.olympia.wa.us/community/sustainability/greenpower.htm
Park City, Utah. Park City has been designated a Green Power Community by EPA for purchasing 3.7% of its electricity use community-wide from green power sources.	http://www.parkcity.org/citydepartments/publicaffairs/pressreleases/index.html
Portland, Oregon. By aggregating purchases, Portland has saved \$300,000 annually, taking advantage of wholesale rates on its power (5% of which was from renewable resources). The city's present goal is to meet 100% of its energy demand with renewable energy by 2010.	http://www.portlandonline.com/osd/index.cfm?c=42399&a=117675
Radnor Township, Pennsylvania. In 2003, the commissioners committed to purchasing 62% green power. This decision was driven by concern over poor air quality caused by electricity generation from fossil fuels in the Philadelphia region.	http://erendev.nrel.gov/greenpower/buying/pr/0303_radnor_pr.html
Rochester, New York. Rochester is purchasing 15% Green-e certified green power for its municipal facilities. The contract through which the green power is provided will save the city \$450,000 over the full term.	http://erendev.nrel.gov/greenpower/buying/customers.shtml?page=1&companyid=445
Salem, Massachusetts. The city of Salem has convened a renewable energy task force to assess the city's potential for purchasing green power and installing renewable energy generation systems at municipal facilities.	http://www.salem.com/Pages/SalemMA_BComm/energy
Salt Lake City, Utah. Salt Lake City purchases 1.5 million kWh of wind power annually for its government and residential buildings. The City and County Building and Main Public Library use 21% wind power for their total demand.	http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=UT06R&state=UT&CurrentPageID=1&RE=1&EE=1
San Antonio, Texas. The San Antonio municipal utility has established a goal of supplying 15% of its power with renewable energy by 2020.	http://dsireusa.org/library/includes/GenericIncentive.cfm?Incentive_Code=TX15R&currentpageid=3&EE=1&RE=1
Santa Monica, California. Santa Monica became the first city in the U.S. to convert to 100% renewable energy in municipal buildings. The city is purchasing 23 million kWh in RECs.	http://www.epa.gov/greenpower/partners/partners/cityofsantamonicaca.htm

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Suffolk County, New York. Suffolk County has enacted legislation that requires the county government to purchase 25% of its electricity from renewable sources by 2010.	http://dsireusa.org/library/includes/incentive_search.cfm?Incentive_Code = NY06R&Search = Eligible&sector = Local&currentpageid = 2&EE = 0&RE = 1
Westport, Connecticut. Westport became one of the first municipalities in the Northeast to commit to purchasing 100% green power. The city's purchases are certified by Green-e.	http://www.eere.energy.gov/greenpower/buying/pr/0102_ctecoop_pr.html
Worcester, Massachusetts. Worcester has adopted a resolution to meet 20% of the municipality's electrical demand with green power by 2010.	http://www.ci.worcester.ma.us/ocm/energy/home.htm
Examples of Local Government Green Power Procurement Programs for Businesses and Residents	
Austin, Texas. The Austin Green Choice Program offers businesses and residents the opportunity to purchase renewable energy from the municipal utility.	http://www.nycclimatesummit.com/casestudies/energy/energy_renew_Austin.html
Beaverton, Oregon. Beaverton has established a Green Power Challenge to encourage businesses and residents to enroll in one of the local utility's renewable energy programs. The city government is leading by example by purchasing 7.6 million kWh of renewable energy for its own facilities in 2007.	http://www.beavertonoregon.gov/government/docs/BeavertonGreenPowerChallenge062007.pdf
Berkeley, California. The Community Choice Aggregation, which includes the cities of Berkeley, Oakland, and Emeryville, provides residential and business electricity customers with alternatives to conventional energy. The initiative's goal is to increase the use of renewable energy in the region.	http://www.ci.berkeley.ca.us/sustainable/government/CommunityChoice/CCA.html
Cape Cod and Martha's Vineyard, Massachusetts. The Cape Light Compact has committed to purchasing RECs, becoming the first entity in Massachusetts to adopt the "Community Choice" aggregation model. Each participating town passed a resolution accepting the purchase agreement. Participation is voluntary for all residents.	http://dsireusa.org/library/includes/incentive_search.cfm?Incentive_Code = MA04R&Search = Eligible&sector = Local&currentpageid = 2&EE = 0&RE = 1
Houston, Texas. Houston Consumer Choice Web site is maintained by the city of Houston to inform electricity customers of opportunities to purchase green power.	http://www.houstonconsumerchoice.com/index.asp
Lincoln City, Oregon. Lincoln City has been named an EPA Green Power Community for encouraging green power throughout the community. Through June 2007, more than 7% of the city's businesses and residents were purchasing green power.	http://www.eere.energy.gov/greenpower/news/news_template.shtml?id = 1266
Los Angeles, California. The Green Power for a Green LA program encourages local businesses and residents to sign up for green power purchases at a cost of 3¢ per kWh.	http://www.ladwp.com/ladwp/cms/ladwp000851.jsp
Ogden City, Utah. Ogden City has established a community energy challenge that aims to increase residential and commercial procurement of green power. One component of the program is a quantity savings option that allows businesses to purchase green power in blocks at wholesale rates.	http://www.ogdencity.com/displayarticle92.html

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Palo Alto, California. Palo Alto has been recognized as an EPA Green Community for achieving an enrollment rate of 16% in its PaloAltoGreen community green power purchasing program.	http://www.cityofpaloalto.org/press/New%20Releases/20061222.htm
Information Resources on Green Power Procurement	
20% by 2010 Campaign. Smart Power, a non-profit clean energy marketing organization, has initiated the 20% by 2010 campaign in Connecticut. Approximately 50 municipalities have pledged to meet the campaign's goal of procuring 20% of electricity needs from green power sources by 2010.	http://www.smartpower.org/20renewable_energy.htm
A Check List for Local Government Green Power RFPs. The Local Government Commission has developed this checklist to guide local governments through the competitive process of selecting green power providers.	http://www.lgc.org/freepub/energy/factsheets/fact3.html
Assessing the Economic Development Impacts of Wind Power. This report provides examples that document the economic development implications of investing in wind power.	http://www.nationalwind.org/publications/economic/econ_final_report.pdf
Clean Energy Funds: An Overview of State Support for Renewable Energy. This LBNL report provides examples of states that have used system benefits charges to promote renewable energy throughout state and local organizations and communities.	http://eetd.lbl.gov/ea/ems/reports/47705.pdf
Clean Energy Resolution. The Connecticut Clean Energy Fund provides information on how to draft a clean energy resolution and provides a sample resolution passed by a local government.	http://www.ctinnovations.com/communities/letterResolution.htm
Community Choice Aggregation. The Local Government Commission developed this fact sheet to advise local governments on how to aggregate community energy purchases to produce significant energy and environmental benefits.	http://www.lgc.org/ccca/docs/ccca_energy_factsheet.pdf
Community Choice Aggregation: A Description and Analysis with Considerations for Colorado. This paper addresses the benefits of aggregating community electricity purchases.	http://www.capelightcompact.org/pdfs/CCA%20report%20for%20distribution.pdf
Customer Aggregation: An Opportunity for Green Power? This NREL report identifies current aggregation practices and assesses the community and environmental benefits of aggregated green power purchases.	http://www.eere.energy.gov/greenpower/resources/pdfs/lb29408.pdf
DSIRE. The Database of State Incentives for Renewable Energy provides information on state and local government renewable energy and energy efficiency incentives.	http://www.dsireusa.org/
Emerging Markets for Renewable Energy Certificates: Opportunities and Challenges. This LBNL report describes the current market for RECs. It provides an overview of how RECs are marketed and identifies key challenges to broader expansion of REC markets.	http://www.eere.energy.gov/greenpower/resources/pdfs/37388.pdf

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Environmental Resources Trust. The Environmental Resources Trust certifies RECs through its EcoPower certification program.	http://www.ert.net/
EPA Communications Guide for Green Power Partners. The EPA Green Power Partnership has developed this communications and outreach guide to assist partners in promoting their organizations' green power purchases.	http://www.epa.gov/greenpower/pdf/commguide.pdf
Federal Grants. The Federal grants.gov program provides information on financial incentives available from 26 government agencies for a range of investments, including renewable energy generation.	http://www.grants.gov/
FEMP Renewable Energy. The DOE FEMP program provides information on federal government initiatives for using renewable energy, including on-site generation.	http://www1.eere.energy.gov/femp/renewable_energy/index.html
Green Power Marketing in the United States, A Status Report. This NREL report provides an overview of current trends in green power prices and the state of renewable energy technologies.	http://erendev.nrel.gov/greenpower/resources/pdfs/40904.pdf
Green Power Marketing in the United States. This NREL report is published annually. It documents growth in the green power market and price trends in regulated and restructured markets for green power.	http://www.eere.energy.gov/greenpower/resources/pdfs/42502.pdf
Green-e. Green-e is a voluntary certification and verification program for wholesale, retail, and commercial electricity products, RECs, and utility green pricing programs.	http://www.green-e.org/
Greening the City of Moab. This EPA presentation provides a list of the criteria for EPA's Green Power Communities certification, as well as steps for community action campaigns.	http://www.eere.energy.gov/greenpower/conference/10gpmc05/wright_clouse.pdf
Guide to Purchasing Green Power. This EPA Green Power Partnership guide provides information on planning and implementing green power purchases.	http://www.epa.gov/greenpower/pdf/purchasing_guide_for_web.pdf
Jobs from Renewable Energy and Energy Efficiency. This fact sheet provides information on existing and projected energy efficiency- and renewable energy-related jobs in the U.S. by sector.	http://www.eesi.org/briefings/2007/Energy%20&%20Climate/11-8-07_green_jobs/EEREJobsFactSheet_11-8-07.pdf
Municipal Guide to Purchasing Renewable Energy. This IREC report provides guidance on designing and financing RFPs for renewable energy purchases.	http://www.mass.gov/Eoca/docs/doer/esmart-purchasing-renewable-energy.pdf
Power Quality Problems and Renewable Energy Solutions. This Massachusetts Technology Collaborative report looks at the relative benefits of renewable energy compared to conventional energy generation with regard to power reliability, power quality, and power availability.	http://www.mtpc.org/Project%20Deliverables/PP_General_Power_Quality_Study.pdf
Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate. This University of California – Berkeley report shows the economic benefits of investing in renewable energy in terms of jobs created.	http://rael.berkeley.edu/files/2004/Kammen-Renewable-Jobs-2004.pdf

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Regulator's Handbook on Renewable Energy Programs & Tariffs. This report by the Center for Resource Solutions provides an overview of state renewable energy programs. The report includes case studies on different states' methods of implementing renewable energy programs.	http://www.resource-solutions.org/policy/TariffHandbook/Handbook_on_Renewable_Energy_Programs_&_Tariffs.pdf
Renewable Energy Certificates: An Attractive Means for Corporate Customers to Purchase Renewable Energy. This World Resources International report provides an overview of RECs, including funding opportunities for procuring RECs and steps for selecting appropriate options.	http://pdf.wri.org/gpmdg_corporate_5.pdf
Renewable Energy Certificates and Generation Attributes. This Regulatory Assistance Project report provides an overview of the concept behind marketing renewable energy attributes.	http://www.raonline.org/Pubs/IssueLtr/RenewableEnergyCertificates.pdf
Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century. This report was developed by the American Solar Energy Society to describe the existing and projected breakdown of renewable energy and energy efficiency-related employment in the United States.	http://www.ases.org/ASES-JobsReport-Final.pdf
Switching to Green. This World Resources Institute report provides guidance to offices and retail companies on procuring green power. The report gives an overview of steps to consider when deciding to switch to green power.	http://pdf.wri.org/switching_to_green.pdf
Tackling Climate Change in the U.S.: Potential Carbon Emissions Reductions from Energy Efficiency and Renewable Energy. This report by the American Solar Energy Society addresses the potential contributions of different energy-efficient and renewable technologies toward GHG emissions reductions. It provides an overview of the status and potential of each renewable energy resource type.	http://www.ases.org/climatechange/climate_change.pdf
Tradable Renewable Certificates Handbook. This handbook provides information on basics and benefits of RECs and provides an overview of the regulator's role in facilitating REC transactions.	http://www.resource-solutions.org/policy/TRChandbook/TRC_Handbook.htm
Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewable Portfolio Standards. This LBNL report provides an overview of the treatment of renewable energy attributes in states that enforce renewable portfolio standards. The report identified implementation issues that arise when RECs are used for RPS compliance.	http://eetd.lbl.gov/ea/ems/reports/62574.pdf
Trends in Utility Green Pricing. This NREL report presents data on trends in green pricing for renewable energy products and provides an overview of utility green pricing program implementation since 1999.	http://www.nrel.gov/docs/fy07osti/40777.pdf
Using Wind Power to Hedge Volatile Electricity Prices for Commercial and Industrial Customers in New York. This report, prepared for the New York State Energy Research and Development Authority, provides a financial analysis of the comparative benefits of relying on wind power as compared to conventional fossil fuels.	http://www.powernaturally.org/About/documents/WindHedgeExSumm.pdf

Table 7.1.1 Green Power Procurement: Examples and Information Resources	
Title/Description	Web Site
Green Power Procurement Tools	
CACP Software. The Clean Air and Climate Protection (CACP) is a Windows-based software tool designed to help state and local governments develop harmonized strategies to reduce both GHG and air pollution emissions. It allows users to create a cross-sector emissions inventory at the entire community level or at the government operations level. This tool was developed as a joint project involving the former State and Territorial Air Pollution Program Administrators and Association of Local Air Pollution Control Officers (STAPPA/ALAPCO), now the National Association of Clean Air Agencies, and ICLEI – Local Governments for Sustainability.	http://www.cacpsoftware.org/
eGRID. EPA's eGRID is a comprehensive source of data on the environmental characteristics of domestic electric power generation. It compiles data from 24 federal sources on emissions and resource mixes for virtually every power plant and company that generates electricity in the United States. It also provides user search options, including aspects of individual power plants, generating companies, states, and regions of the power grid.	http://www.epa.gov/cleanenergy/egrid/index.htm
EPA Green Power Locator. This tool enables users to locate green power options available in each state.	http://www.epa.gov/greenpower/locator/index.htm
EPA Power Profiler Tool. This EPA tool provides emission factors for a given region to help calculate the pollution benefits of energy savings. Users enter a ZIP code and specify their electric utility. This tool uses information from EPA's eGRID database of emissions and electricity generation data.	http://www.epa.gov/cleanenergy/powerprofiler.html
GHG Equivalencies Calculator. Local governments can use this calculator to translate GHG emissions reductions into more tangible quantities (e.g., vehicle miles reduced or trees planted).	http://www.usctcgateway.net/tool/
Power Scorecard. The Power Scorecard is a Web-based information tool created by a coalition of environmental groups. It enables consumers to compare the environmental impacts of green power and conventional power products.	http://www.powerscorecard.org/

References

Ann Arbor. 2006. Resolution to Set Renewable Energy Goals. Available: <http://www.dsireusa.org/documents/Incentives/MI08R.pdf>. Accessed 8/3/2007.

Ann Arbor. 2007. Green Energy Challenge. Available: <http://www.a2gov.org/PublicServices/SystemsPlanning/Energy/EnergyChallenge.html>. Accessed 7/30/2007.

Apollo. 2007. Community Jobs in the Green Economy. Apollo Alliance and Urban Habitat. Available: <http://urbanhabitat.org/files/Community-Jobs-in-the-Green-Economy.pdf>. Accessed 1/10/2008.

- Ashland. 2007. Renewable Energy Programs. Available: <http://www.ashland.or.us/Page.asp?NavID = 1532>. Accessed 9/17/2007.
- Austin. 2007. City Demographics. Available: <http://www.ci.austin.tx.us/census/faqs.htm>. Accessed 8/10/2007.
- Austin. 2007b. Austin Energy Boosting Wind-Generated Power. Available: <http://www.bizjournals.com/austin/stories/2007/09/03/daily9.html>. Accessed 9/20/2007.
- Austin City Council. 2007. Austin City Council. Available: <http://www.ci.austin.tx.us/council/default.htm>. Accessed 8/10/2007.
- Austin Energy. 2003. Strategic Plan – Public Document. Available: <http://www.austinenergy.com/About%20Us/Newsroom/Reports/strategicPlan.pdf>. Accessed 9/12/2007.
- Austin Energy. 2007. GreenChoice Program Details. Available: <http://www.austinenergy.com/energy%20efficiency/Programs/Green%20Choice/programDetails.htm>. Accessed 8/10/2007.
- Austin Energy. 2007b. Rebates and Incentives. Available: <http://www.austinenergy.com/energy%20efficiency/Programs/Rebates/Solar%20Rebates/Solar%20Water%20Heater/index.htm>. Accessed 8/10/2007.
- AWEA. Undated. What does green power cost? Fact sheet. American Wind Energy Association. Available: http://www.awea.org/greenpower/gp_why4.html. Accessed 3/20/2007.
- AWEA. Undated(b). Why should I buy green power? Available: http://www.awea.org/greenpower/gp_why1.html. Accessed 8/20/2007.
- AWEA. 2004. Green Pricing Resource Guide. Available: <http://www.awea.org/greenpower/greenPricingResourceGuide040726.pdf>. Accessed 8/20/2007.
- Bellingham. 2002. Resolution 2002-44. Available: [http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/f65368a432a58daf88256c8c006f7545/\\$FILE/200244.pdf](http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/f65368a432a58daf88256c8c006f7545/$FILE/200244.pdf). Accessed 1/24/2008.
- Bellingham. 2005. Resolution 2005-08. Available: [http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/1eb7848768b16dce88256fc5006c7df4/\\$FILE/200508.pdf](http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/1eb7848768b16dce88256fc5006c7df4/$FILE/200508.pdf). Accessed 1/24/2008.
- Bellingham. 2006. City of Bellingham Leads Nation in Support of Renewable Energy by “Greening” 100% of Municipal Energy Use. July 31, 2006. Available: <http://www.cob.org/features/2006-07-31-green-power.aspx>. Accessed 3/23/2007.
- Bellingham. 2006b. Resolution 2006-28. Available: [http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/f5420fe3cf4ccecf882571b60072502f/\\$FILE/200628.pdf](http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/f5420fe3cf4ccecf882571b60072502f/$FILE/200628.pdf). Accessed 1/24/2008.

Bellingham. 2007. Greenhouse Gas Inventory and Climate Protection Action Plan. Available: <http://conservation.whatcomcounty.org/energy/documents/BellinghamGHGInventoryandActionPlan.pdf>. Accessed 1/24/2008.

Bellingham. 2007b. Bellingham Receives 2007 EPA Green Power Leadership Award. October 25, 2007. Available: <http://www.piersystem.com/go/doc/1264/180215>. Accessed 1/24/2008.

Bellingham. 2007c. Resolution 2007-10. Available: [http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/672f7f6d83c263c1882572d5007871a3/\\$FILE/200710.pdf](http://www.cob.org/web/legilog.nsf/0835b31f5719a205882566f0006c1444/672f7f6d83c263c1882572d5007871a3/$FILE/200710.pdf). Accessed 1/24/2008.

Bellingham. 2007d. Community Recognized for National Leadership in Renewable Energy. Available: <http://www.cob.org/features/2007-04-24-green-community.aspx>. Accessed 1/24/2008.

Bird, L., L. Dagher, and B. Swezey. 2007. Green Power Marketing in the United States. NREL/TP-670-42502. Available: <http://www.eere.energy.gov/greenpower/resources/pdfs/42502.pdf>. Accessed 3/28/2008.

Boulder. 2005. City of Boulder Challenge Community to Increase Wind Power Purchases. Available: http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=1273&Itemid=165. Accessed 8/3/2007.

Boulder. 2005b. Boulder Exceeds Goals of Wind Challenge. Available: http://www.ci.boulder.co.us/index.php?option=com_content&task=view&id=1778&Itemid=165. Accessed 8/21/2007.

City Light. 2002. Seattle City Light Wind Power Purchase. Available: <http://www.greenpowergovs.org/wind/seattle.pdf>. Accessed 7/30/2007.

Clark County. 2002. News Release, September 25, 2002. Available: <http://www.clarkpublicutilities.com/AboutUs/newsRoom/Archives/2002news/Archives/9-25-02news>. Accessed 8/3/2007.

CLC. 2007. Cape Light Compact Green. Available: <http://www.capelightcompact.org/doc.cml?10>. Accessed 9/18/2007.

Columbia. 2007. 2007 Renewable Energy Report. Available: <http://www.gocolumbiamo.com/WaterandLight/Documents/2007renewableenergyreport.pdf>. Accessed 7/30/2007.

Constellation NewEnergy. 2007. Constellation NewEnergy Signs Renewable Energy Agreement with City of Evanston, Illinois. Available: <http://www.newenergy.com/portal/site/cne/menuitem.7485e1732aa1ff5e18a805e4da6176a0?title=020807>. Accessed 9/13/2007.

DSIRE. 2006. Salt Lake City – Green Power Purchasing. Available: http://www.dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=UT06R&state=UT¤tpageid=7&search=TableState&EE=1&RE=1. Accessed 8/1/2007.

DSIRE. 2006b. Aspen – Green Power Purchasing. Available: http://dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=CO19R&Search=Eligible§or=Local¤tpageid=2&EE=0&RE=1. Accessed 8/3/2007.

DSIRE. 2007a. City of Evanston – Green Power Purchase. Available: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=IL11R&state=IL&CurrentPageID=1&RE=1&EE=1. Accessed 7/30/2007.

DSIRE. 2007b. Conway – Green Power Purchasing. Available: http://dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=SC01R&Search=Eligible§or=Local¤tpageid=2&EE=0&RE=1. Accessed 8/3/2007.

DSIRE. 2007c. Suffolk County – Green Power Purchasing Policy. Available: http://dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=NY06R&Search=Eligible§or=Local¤tpageid=2&EE=0&RE=1. Accessed 8/3/2007.

DSIRE. 2007d. Austin – Renewable Portfolio Standard. Available: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=TX11R&state=TX&CurrentPageID=1&RE=1&EE=1. Accessed 8/10/2007.

DSIRE. 2007e. Montgomery County – Green Power Purchasing. Available: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=MD08R&state=MD&CurrentPageID=1&RE=1&EE=1. Accessed 8/10/2007.

DSIRE. 2007f. Montgomery County Wind Power Purchasing. Available: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=PA10R&state=PA&CurrentPageID=1&RE=1&EE=1. Accessed 1/30/2008.

EIA. 2006. Emissions of Greenhouse Gases in United States: 2005. Available: <http://www.eia.doe.gov/oiaf/1605/ggrpt/carbon.html>. Accessed 10/25/2007.

EIA. 2008. Generation and Consumption of Fuels for Electricity Generation, March 2008. Available: http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html. Accessed 3/28/2008.

Grand Rapids. 2007. Approval of Participation in Consumers Energy’s Green Generation Renewable Energy Program. Available: <http://www.dsireusa.org/documents/Incentives/MI13R.pdf>. Accessed 1/28/2008.

Green-e. 2008. Green-e Marketplace. Available: http://www.green-e.org/getcert_bus_what.shtml. Accessed 4/11/2008.

ICLEI. 2005. Case Study: Fort Collins, Colorado. Available: <http://www.greenpowergovs.org/wind/Fort%20Collins%20case%20study.html>. Accessed 7/30/2007.

ICLEI. Undated. Case Study: Madison, Wisconsin. Available: <http://www.greenpowergovs.org/wind/Madison%20case%20study.html>. Accessed 7/30/2007.

Illinois. 2007. Lt. Gov. Pat Quinn Challenge Local Governments to Purchase Renewable Energy: 'It's as easy as 3-4-5.'" Available:

<http://www.illinois.gov/PressReleases/ShowPressRelease.cfm?SubjectID = 14&RecNum = 5902>. Accessed 7/30/2007.

IREC. Undated. Municipal Guide to Purchasing Renewable Energy. Available:

<http://www.mass.gov/Eoca/docs/doer/esmart-purchasing-renewable-energy.pdf>. Accessed 7/31/2007.

Lacey. 2007. City of Lacey Named to EPA Green Power Leadership Club. Available:

<http://www.ci.lacey.wa.us/press/releases/08-22-07.html>. Accessed 3/11/2008.

Lansing. 2007. Executive Order 2007-01. Available:

<http://www.dsireusa.org/documents/Incentives/MI11R.htm>. Accessed 1/30/2008.

LCCS. 2007. Austin's Renewable Energy Program Reduces CO₂ Emissions by 370,257 Tons A Year. Available:

http://www.nycclimatesummit.com/casestudies/energy/energy_renew_Austin.html. Accessed 8/20/2007.

LGC. Undated. Community Choice Aggregation. Available: <http://www.lgc.org/cca/index.html>. Accessed 8/2/2007.

Montgomery County. 2003. Montgomery County Energy Policy. Available:

<http://www.dsireusa.org/documents/Incentives/MD08R.pdf>. Accessed 8/20/2007.

Montgomery County. 2004. Montgomery County Signs Agreement to Purchase Wind Energy: *Largest Local Government Purchase in Country*. News release. May 13, 2004. Available:

http://www.montgomerycountymd.gov/apps/News/press/PR_details.asp?PrID=896. Accessed 3/26/2007.

Montgomery County. 2006. Duncan Announces Energy Contracts Savings Nearly \$25 Million.

Available: http://www.montgomerycountymd.gov/apps/News/press/PR_details.asp?PrID = 1752. Accessed 8/20/2007.

Montgomery County. 2007. Clean Energy Rewards. Available:

<http://www.montgomerycountymd.gov/deptmpl.asp?url = /content/dep/rewards.asp>. Accessed 7/31/2007.

Montgomery County. 2007b. Montgomery County Climate Actions, Policies, and Programs.

Available: <http://www.montgomerycountymd.gov/deptmpl.asp?url = /content/dep/Energy/MCCAI/mcclimateactions.asp>. Accessed 8/20/2007.

MNCPPC. 2007. Montgomery County, Maryland...at a glance. Available: [http://www.mc-](http://www.mc-mncppc.org/research/data_library/data%20library%20portal/documents/AtAGlanceJuly2007_00)

[mncppc.org/research/data_library/data%20library%20portal/documents/AtAGlanceJuly2007_00](http://www.mc-mncppc.org/research/data_library/data%20library%20portal/documents/AtAGlanceJuly2007_00).pdf. Accessed 8/10/2007.

MTC. 2006. Massachusetts Technology Collaborative: Clean Energy Choice. Available: <http://masstech.org/CleanEnergyOrg/index.htm>. Accessed 3/29/2007.

Multnomah. 2000. Resolution 00-046. Available: <http://www2.co.multnomah.or.us/Public/EntryPoint?ch=4da0f4ba0fd7c010VgnVCM1000003bc614acRCRD&ct=83e5df87476cc010VgnVCM1000003bc614acRCRD>. Accessed 8/20/2007.

Newport News. 2007. Lincoln City First on Coast to Receive Green Power Status. Available: <http://www.newportnewstimes.com/articles/2007/06/27/news/news05.txt>. Accessed 9/14/2007.

NREL. 2001. Customer Aggregation: An Opportunity for Green Power? Available: <http://www.eere.energy.gov/greenpower/resources/pdfs/lb29408.pdf>. Accessed 7/31/2007.

NYSERDA. 2003. Using Wind Power to Hedge Volatile Electricity Prices for Commercial and Industrial Customers in New York. Available: <http://www.powernaturally.org/About/documents/WindHedgeExSumm.pdf>. Accessed 8/6/2007.

Ogden City. 2007. Ogden Blue Sky Community Challenge. Available: <http://www.ogdencity.com/displayarticle92.html>. Accessed 8/6/2007.

Oregon. 2007. Energy Information for Governments. Available: <http://oregon.gov/ENERGY/CONS/GOV/govhme.shtml>. Accessed 8/14/2007.

Palo Alto. 2006. Palo Alto is First California Green Power Community Recognized by Environmental Protection Agency. Available: <http://www.cityofpaloalto.org/press/New%20Releases/20061222.htm>. Accessed 7/30/2007.

Park City. 2007. Wind Power. Available: http://www.parkcity.org/getinvolved/windpower/wind_power.html. Accessed 1/24/2008.

Philadelphia. 2007. Local Action Plan for Climate Change. Available: <http://www.phila.gov/green/localaction/pdf/PhiladelphiaClimateChangeLocalActionPlan2007.pdf>. Accessed 8/6/2007.

Portland. 2007. 100% Renewable by 2012. Available: <http://www.austinenergy.com/energy%20efficiency/Programs/Green%20Choice/index.htm>. Accessed 8/10/2007.

REPP. 2005. Component Manufacturing: Ohio's Future in the Renewable Energy Industry. Renewable Energy Policy Project. Available: http://www.crest.org/articles/static/1/binaries/Ohio%20Manufacturing%20Report_2.pdf. Accessed 1/10/2008.

San Francisco PUC. 2005. San Francisco Community Choice Aggregation Draft Implementation Plan. Available: http://sfwater.org/detail.cfm/MC_ID/12/MSC_ID/138/MTO_ID/237/C_ID/2475. Accessed 7/31/2007.

Seattle. 1999. Resolution Number 30021. Available: <http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?d=RESN&s1=30021.resn.&Sect6=HITOFF&l=20&p=1&u=~public/cbor2.htm&r=1&f=G>. Accessed 8/20/2007.

Sierra Club. 2005. Sustainable Cities. Available: <http://rmc.sierraclub.org/energy/library/sustainablecities.pdf>. Accessed 3/26/2007.

Smart Power. 2007. The City of Hartford Announces Significant Green Energy Purchase to Help Lead Connecticut's Clean Energy Efforts. Available: <http://www.smartpower.org/press/Hartford%20Announces%20Significant%20Green%20Energy%20Purchase.pdf>. Accessed 8/6/2007.

Smart Power. 2007b. Pennsylvania Clean Energy Communities Campaign. Available: <http://communities.trfund.com/>. Accessed 1/10/2008.

Smart Power. 2007c. Smart Power. Available: <http://www.smartpower.org/>. Accessed 1/14/2008.

Sustainable Connections. 2007. Green Power Businesses. Available: <http://www.sconnect.org/practices/greenpower>. Accessed 1/14/2008.

Sustainable Connections. 2007b. Energy: Green Power and Conservation. Available: <http://www.sconnect.org/energy>. Accessed 1/24/2008.

Swarthmore. 2007. With 26% Green Energy Consumers, Borough now Cleanest in State. In *The Daily Gazette*. 12/12/2007. Available: <http://www.sccs.swarthmore.edu/org/daily/2007/12/12/with-26-green-energy-consumers-borough-now-cleanest-in-state>. Accessed 1/10/2008.

Texas SECO. 2007. Texas Wind Energy. Available: http://www.seco.cpa.state.tx.us/re_wind.htm. Accessed 9/19/2007.

U.S. Conference of Mayors. 2007. Energy and Environment Best Practices Guide. Available: http://www.usmayors.org/uscm/best_practices/EandEBP07.pdf. Accessed 7/31/2007.

U.S. DOE. 2004. Westport Becomes First Municipality in the Northeast to Buy Green Power. Available: http://www.eere.energy.gov/greenpower/buying/pr/0102_ctecoop_pr.html. Accessed 8/6/2007.

U.S. DOE. 2006. Large Purchasers of Green Power. Available: <http://erendev.nrel.gov/greenpower/buying/customers.shtml?page=1&companyid=518>. Accessed 8/6/2007.

U.S. DOE. 2006b. Large Purchases of Green Power: Hartford, Connecticut. Available: <http://www.eere.energy.gov/greenpower/buying/customers.shtml?page=1&companyid=554>. Accessed 8/14/2007.

- U.S. DOE. 2007. Renewable Energy Certificates: Energy Resources Trust. Available: <http://www.eere.energy.gov/greenpower/markets/certificates.shtml?page=2&companyid=116>. Accessed 8/3/2007.
- U.S. DOE. 2007b. Large Purchasers of Green Power: City of Dallas. Available: <http://erendev.nrel.gov/greenpower/buying/customers.shtml?page=1&companyid=526>. Accessed 8/6/2007.
- U.S. DOE. 2007c. Large Purchases of Green Power: City of Houston. Available: <http://erendev.nrel.gov/greenpower/buying/customers.shtml?page=1&companyid=583>. Accessed 8/21/2007.
- U.S. DOE. 2007d. Green Power Markets. Available: <http://erendev.nrel.gov/greenpower/markets/index.shtml>. Accessed 8/21/2007.
- U.S. DOE. 2007e. Buying Green Power. Available: <http://www.eere.energy.gov/greenpower/buying/index.shtml>. Accessed 9/18/2007.
- U.S. DOE. 2007f. Green Pricing. Available: <http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=2&companyid=50>. Accessed 9/20/2007.
- U.S. DOE. 2007g. Renewable Energy Certificates Retail Products. Available: <http://www.eere.energy.gov/greenpower/markets/certificates.shtml?page=1>. Accessed 3/28/2008.
- U.S. EPA. 2004. Guide to Purchasing Green Power. Available: <http://www.epa.gov/greenpower/buygreenpower/guide.htm>. Accessed 7/6/2007.
- U.S. EPA. 2005. Green Power Communities. Available: <http://www.epa.gov/greenpower/pdf/GreenPowerCommunities.pdf>. Accessed 8/3/2007.
- U.S. EPA. 2006. Clean Energy-Environment Guide to Action. Available: http://www.epa.gov/cleanenergy/pdf/gta/guide_action_full.pdf. Accessed 7/19/2007.
- U.S. EPA. 2007. What is Renewable Energy? Available: <http://www.epa.gov/greenpower/whatis/renewableenergy.htm>. Accessed 7/25/2007.
- U.S. EPA. 2007b. Montgomery County Wind Buyers Group. Available: <http://www.epa.gov/greenpower/partners/partners/montgomerycountywindbuyersgroup.htm>. Accessed 8/20/2007.
- U.S. EPA. 2007c. City of Lincoln City, Oregon. Available: <http://www.epa.gov/greenpower/partners/partners/cityoflincolncityor.htm>. Accessed 9/14/2007.
- U.S. EPA. 2007d. Renewable Energy Certificates. Available: <http://www.epa.gov/greenpower/gpmarket/rec.htm>. Accessed 10/25/2007.

U.S. EPA. 2007e. Clean Energy: Air Emissions. Available: <http://www.epa.gov/solar/energy-and-you/affect/air-emissions.html>. Accessed 1/9/2008.

U.S. EPA. 2007f. Become a Green Power Community. Available: <http://www.epa.gov/greenpower/communities/become.htm>. Accessed 1/11/2008.

U.S. EPA. 2007g. Partner List: New York State Municipal Wind Buyers Group. Available: <http://www.epa.gov/greenpower/partners/partners/newyorkstatemunicipalwindbuyersgroup.htm>. Accessed 1/12/2008.

U.S. EPA. 2007h. Green Power Partnership: Park City, Utah. Available: <http://www.epa.gov/greenpower/partners/partners/parkcityutcommunity.htm>. Accessed 1/24/2008.

U.S. EPA. 2008. Montgomery County Wind Buyers Group. Available: <http://www.epa.gov/greenpower/partners/partners/montgomerycountywindbuyersgroup.htm>. Accessed 3/12/2008.

U.S. EPA. 2008b. Air Emissions. Available: <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>. Accessed 3/28/2008.

WAPA. 2005. Murray City Power meets its match in landfill powerplant. Western Area Power Administration, Energy Services Bulletin 24:4, August 2005. Available: <http://www.wapa.gov/es/pubs/esb/2005/august/aug054.htm>. Accessed 3/29/2007.

Worcester. 2006. Climate Action Plan. Available: <http://www.ci.worcester.ma.us/reports/ClimateActionPlan.pdf>. Accessed 3/12/2008.

WRI. 2003. Renewable Energy Certificates: An Attractive Means for Corporate Customers to Purchase Renewable Energy. Available: http://pdf.wri.org/gpmdg_corporate_5.pdf. Accessed 7/30/2007.

WRI. 2006. Switching to Green. Available: http://pdf.wri.org/switching_to_green.pdf. Accessed 7/30/2007.

WRI. Undated. Developing “Next Generation” Green Power Products for Corporate Markets in North America. Available: http://pdf.wri.org/corporate_guide_6.pdf. Accessed 8/6/2007.