State and Local
Climate and Energy Program

LOCAL GOVERNMENT CLIMATE AND ENERGY STRATEGY SERIES

Energy-Efficient Product Procurement

A Guide to Developing and Implementing Greenhouse Gas Reduction Programs

Energy Efficiency

U.S. ENVIRONMENTAL PROTECTION AGENCY
2011

EPA's Local Government Climate and Energy Strategy Series

The *Local Government Climate and Energy Strategy Series* provides a comprehensive, straightforward overview of greenhouse gas (GHG) emissions reduction strategies for local governments. Topics include energy efficiency, transportation, community planning and design, solid waste and materials management, and renewable energy. City, county, territorial, tribal, and regional government staff, and elected officials can use these guides to plan, implement, and evaluate their climate change mitigation and energy projects.

Each guide provides an overview of project benefits, policy mechanisms, investments, key stakeholders, and other implementation considerations. Examples and case studies highlighting achievable results from programs implemented in communities across the United States are incorporated throughout the guides.

While each guide stands on its own, the entire series contains many interrelated strategies that can be combined to create comprehensive, cost-effective programs that generate multiple benefits. For example, efforts to improve energy efficiency can be combined with transportation and community planning programs to reduce GHG emissions, decrease energy and transportation costs, improve air quality and public health, and enhance quality of life.

LOCAL GOVERNMENT CLIMATE AND ENERGY STRATEGY SERIES

All documents are available at: ***www.epa.gov/statelocalclimate/resources/strategy-guides.html***.

ENERGY EFFICIENCY

- Energy Efficiency in Local Government Operations
- Energy Efficiency in K–12 Schools
- Energy Efficiency in Affordable Housing
- Energy-Efficient Product Procurement
- Combined Heat and Power
- Energy Efficiency in Water and Wastewater Facilities

TRANSPORTATION

- Transportation Control Measures

COMMUNITY PLANNING AND DESIGN

- Smart Growth

SOLID WASTE AND MATERIALS MANAGEMENT

- Resource Conservation and Recovery

RENEWABLE ENERGY

- Green Power Procurement
- On-Site Renewable Energy Generation
- Landfill Gas Energy

Please note: All Web addresses in this document were working as of the time of publication, but links may break over time as sites are reorganized and content is moved.

CONTENTS

EXECUTIVE SUMMARY

Developing and Implementing Energy Efficiency Programs

Saving energy through energy efficiency improvements can cost less than generating, transmitting, and distributing energy from power plants, and provides multiple economic and environmental benefits. As President Obama said in June 2009, "By bringing more energy-efficient technologies to American homes and businesses, we won't just significantly reduce our energy demand—we'll put more money back in the pockets of hardworking Americans." Energy efficiency also helps reduce air pollution and greenhouse gas emissions, improves energy security and independence, and creates jobs.

Local governments can promote energy efficiency in their jurisdictions by developing and implementing strategies that improve the efficiency of municipal facilities and operations and/or encourage energy efficiency improvements in residential, commercial, and industrial sectors. The energy efficiency guides in this series describe the process of developing and implementing strategies, using real-world examples, for improving energy efficiency in local government operations (see the guides on local government operations, K-12 schools, combined heat and power, and water and wastewater facilities), as well as in the community (see the guide on affordable housing).

Energy-Efficient Product Procurement

Many local governments are saving energy by requiring that the energy-using products they purchase meet energy efficiency criteria. This guide describes how local governments have planned and implemented energy-efficient product procurement programs to reduce energy costs and create a range of environmental and economic benefits. It is designed to be used by local government officials who set purchasing policy, local and state government purchasers, staff from local energy and environment departments, product specifiers, energy service companies that provide purchasing assistance to local governments, and end users such as maintenance teams.

Readers of the guide should come away with an understanding of how to develop an energy-efficient product procurement program, the types of energy-efficient products that are available for local government facilities and operations, and an awareness of expected costs and funding opportunities.

RELATED GUIDES IN THIS SERIES

- **Renewable Energy: *Green Power Procurement***

  Green power is a subset of renewable energy that is produced with no greenhouse gas emissions, typically from solar, wind, geothermal, biogas, biomass, or low-impact small hydroelectric sources. By combining green power with energy-efficient product procurement, local governments can maximize both their energy cost savings and greenhouse gas emissions reductions.

- **Energy Efficiency: *Energy Efficiency in Local Government Operations***

  Local governments can implement energy-saving measures in existing local government facilities, new and green buildings, and day-to-day operations. Because energy-efficient product procurement helps reduce energy loads, it can also increase the cost-effectiveness of other energy efficiency activities, such as facility upgrades.

- **Energy Efficiency: *Combined Heat and Power***

  Combined heat and power (CHP), also known as cogeneration, refers to the simultaneous production of electricity and thermal energy from a single fuel source. CHP can significantly reduce a facility's energy use and GHG emissions by decreasing the amount of fuel required to meet the facility's electrical and thermal base loads, furthering the benefits of energy-efficient product procurement.

- **Solid Waste and Materials Management: *Resource Conservation and Recovery***

  Resource conservation and recovery include source reduction, reuse, recycling, composting, and procurement of products with recycled content, which can reduce the greenhouse gas emissions that sometimes result from waste management practices. These approaches complement the procurement of energy efficient products by emphasizing management of materials along their entire life cycle to minimize waste and environmental impacts.

The guide describes the energy, environmental, economic, and other benefits of energy-efficient product procurement (section 2); energy-efficient product procurement measures (section 3); key participants and their roles (section 4); the policy mechanisms that local governments have used to support energy-efficient product procurement programs (section 5); implementation strategies for effective programs (section 6); costs and funding opportunities (section 7); federal, state, and other programs that provide resources to help local governments plan and implement energy-efficient product procurement (section 8); and two case studies of comprehensive local government programs for energy-efficient product procurement (section 9). Additional examples of successful energy-efficient product procurement and information resources are provided throughout the guide.

Relationships to Other Guides in the Series

Local governments can use other guides in this series to develop robust climate and energy programs that incorporate complementary strategies. For example, energy-efficient purchasing can be combined with **green power procurement** to enhance the benefits of a renewable energy program. Local governments can also plan and implement activities to reduce energy use by improving the energy efficiency of their **facilities and operations**, and by increasing use of **combined heat and power (CHP)** systems in their facilities and throughout the community. Recycling and other **resource conservation and recovery** activities can provide additional cost savings and environmental benefits that complement procurement of energy-efficient products by promoting a stewardship approach to products along their entire life cycles.

See the box on page iii for more information about these complementary strategies. Additional connections to related strategies are highlighted in the guide.

Energy-Efficient Product Procurement

1. OVERVIEW

Many local governments are saving energy by requiring that the energy-using products they purchase meet energy efficiency criteria. Purchasing energy-efficient products, which operate as effectively as conventional ones, can reduce government facility energy costs by about 5–10 percent (LBNL, 2002). In addition to reducing energy costs, energy-efficient product procurement can lower maintenance costs (because energy-efficient products require less frequent replacement), reduce greenhouse gas (GHG) emissions, and enhance pollution prevention and resource conservation activities. Because energy-efficient product procurement helps reduce energy loads, it can also increase the cost-effectiveness of other energy efficiency activities, such as facility upgrades.

This guide highlights local government and community benefits associated with energy-efficient product procurement. It also provides information on how local governments have planned and implemented energy-efficient product procurement programs, sources of funding, and case studies. Additional examples and resources are provided in Section 10, *Additional Examples and Information Resources* (see page 24).

A WORD ABOUT TERMINOLOGY

Local governments can implement energy-efficient product procurement as stand-alone programs or as part of broader programs for purchasing products with a variety of environmental attributes. These programs vary in scope and terminology.

Green purchasing generally describes activities that focus on purchasing products and services that have positive energy and environmental attributes, including energy efficiency, recycled content, and reduced toxic content. Energy-efficient product procurement falls within the scope of green purchasing.

While green purchasing focuses on products that have positive energy or environmental attributes, ***environmentally preferable product (EPP)*** procurement assesses multiple energy and environmental attributes to determine which of these green products are preferable in a given situation. For example, in a facility with poor indoor air quality, paint with low volatile organic compound (VOC) content is both green and environmentally preferable, while paint with recycled latex content is green, but not the preferable product in this situation. In most situations, energy-efficient products are considered environmentally preferable.

This guide focuses on energy-efficient product procurement. However, green purchasing and EPP procurement programs that include energy efficiency are also addressed.

2. BENEFITS OF ENERGY-EFFICIENT PRODUCT PROCUREMENT

Energy-efficient product procurement activities can produce significant energy, environmental, economic, and other benefits by helping local governments to:

- **Reduce GHG emissions and other environmental impacts.** Using energy-efficient products reduces the quantity of fossil fuels that are burned to generate energy (U.S. EPA, 2008a). Fossil-fueled power plants are responsible for approximately 40 percent of the nation's emissions of carbon dioxide (CO_2), a GHG, and 67 percent and 23 percent of the nation's sulfur dioxide (SO_2) and nitrogen oxide (NO_x) emissions, respectively (U.S. EPA, 2007g). Replacing conventional products with energy-efficient ones can lower a local government's GHG and air pollution emissions. Replacing 100 conventional light bulbs with compact fluorescent light bulbs (CFLs), for example, can reduce nearly 31.5 metric tons of CO_2 emissions over a nine-year product lifetime (U.S. EPA and U.S. DOE, 2008). Table 1, *Estimated Energy Cost and CO_2 Savings from a Sample of ENERGY STAR Products* on page 3, summarizes the potential CO_2 emission reductions from purchasing energy-efficient products in five product categories.

- **Reduce energy costs.** Because energy-efficient products require less energy to operate than conventional products, purchasing these products can reduce facility energy loads and achieve energy bill savings on the order of 5–10 percent (LBNL, 2002). The ENERGY STAR program, a joint initiative administered by the U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE), develops energy efficiency specifications for more than 60 product categories. Relative to conventional products, ENERGY STAR qualified products typically use 10–75 percent less energy and can offer consumers energy cost savings of as much as 75 percent (U.S. EPA, 2009a; U.S. EPA, 2008a). Energy-efficient products can also reduce energy costs indirectly because they do not generate as much unwanted heat as conventional products, thus lowering cooling energy loads. Table 1 on page 3 demonstrates the potential energy cost savings of purchasing energy-efficient products in five product categories.

Many local governments have found that energy-efficient product procurement can be integrated with other environmental activities, such as pollution prevention and resource conservation. Phoenix, Arizona, for example, has incorporated ENERGY STAR qualified product procurement as part of a broader pollution prevention program (Phoenix, 2007).

- **Reduce maintenance costs.** Because energy-efficient products, such as CFLs and light-emitting diode (LED) exit signs, often have longer productive lifetimes than less efficient products, maintenance and replacement cost savings over their lifetimes can be significant. LED traffic signals, for example, often require no maintenance throughout their lifetimes (approximately seven years), while annual maintenance costs for conventional traffic signals can reach as high as $105 per unit (CEE, 2002). Reducing the number of times a product must be replaced can be especially important when replacement involves handling valuable or antique items, often found in local government facilities.

- **Increase economic benefits through job creation and market development.** State and local governments spend a combined $50 billion to $70 billion to purchase energy-using products each year (Harris et al., 2004). Specifying that these funds be used to purchase energy-efficient products can stimulate the local economy and encourage development of energy efficiency service markets. According to DOE, approximately 60 percent of the cost of efficiency investments goes to labor. In addition, half of all energy-efficient equipment is purchased from local suppliers (U.S. DOE, 2004). For every dollar spent in local economies, energy efficiency generates about $0.55 to $0.85 more economic activity than the payment of energy bills (Hatcher and Dietsche, 2001).

- **Demonstrate leadership.** Purchasing energy-efficient products can help raise public awareness about the important energy, environmental, economic, and other benefits of energy efficiency, which can lead to broader adoption of energy-efficient practices by local businesses and residents. In addition, by specifying energy-efficient products, local governments can accelerate development of markets for these products, leading to increased public demand and lower prices (Harris et al., 2004).

- **Increase reliability.** When an energy-using product reaches the end of its usable life and "burns out," there is often a lag time of inactivity before the product is replaced. Energy-efficient products typically experience less frequent periods of inactivity because they have longer lifetimes than conventional products. This benefit is particularly important in areas where periods of product inactivity can have serious consequences, such as traffic lighting (U.S. EPA, 2004a).

- **Improve occupant health.** Some energy-efficient products remove sources of indoor air contaminants. Energy recovery ventilation equipment, for example, can reduce infiltration of air contaminants from outdoors while significantly reducing a building's HVAC energy load (U.S. EPA, 2003a). One study of building performance found that the average reduction in illness as a result of improving air quality in buildings is approximately 40 percent (Carnegie Mellon, 2005).

TABLE 1 ESTIMATED ENERGY COST AND CO_2 SAVINGS FROM A SAMPLE OF ENERGY STAR PRODUCTS[a]

Action	Annual Energy Cost Savings	Annual CO_2 Savings (Tons)	Lifetime (Years)	Life-Cycle Energy Cost Savings	Life-Cycle CO_2 Savings (Tons)
Replace 5,000 computers and monitors with ENERGY STAR qualified products and activate power management	$290,210	2,177	4	$663,428	8,708
Replace 10 conventional commercial dishwashers with ENERGY STAR qualified products	$8,690[b]	57	10	$60,483[b]	567
Replace 50 conventional vending machines with ENERGY STAR qualified products[c]	$8,544	64	14	$90,250	894
Replace 100 conventional water coolers with ENERGY STAR qualified coolers	$3,722	28	10	$30,188	278

[a] Figures obtained from calculators on the ENERGY STAR Purchasing & Procurement Web site *http://www.energystar.gov/purchasing* using default settings and an electricity rate of 10.3¢ per kilowatt-hour (kWh) (EIA, 2009). Annual costs exclude the initial purchase price and installation cost. All costs are discounted over the product's lifetime using a real discount rate of 4 percent.

[b] Value includes water savings.

[c] Vending machines assumed to have capacities of less than 500 cans.

3. ENERGY-EFFICIENT PRODUCT PROCUREMENT MEASURES

There are many opportunities to incorporate energy-efficient products in local government facilities and operations, including:

- **Lighting systems.** According to the most recent Commercial Buildings Energy Consumption Survey (CBECS), lighting accounts for 15 percent of total energy use in local government buildings (EIA, 2008). Local governments can improve the energy efficiency of lighting systems by installing energy-efficient products such as CFLs, LED exit signs, and automated lighting controls. Commercial LED lighting lasts 35 to 50 times longer than incandescent lighting and 2 to 5 times longer than fluorescent lighting, which reduces bulb replacement and maintenance costs (U.S. EPA, 2011).

A STAGED APPROACH TO IMPROVING ENERGY EFFICIENCY

Local governments can achieve substantial benefits from improved energy efficiency by taking a staged approach to designing and upgrading buildings. This approach enables organizations to implement energy efficiency measures in steps and achieve greater savings overall. These steps include:

1. *Reduce energy loads*. Purchasing energy-efficient lighting systems, office equipment, building envelope components, and water-efficient fixtures can reduce overall energy loads and reduce unwanted byproduct heat.
2. *Match building systems to reduced energy loads*. Purchasing energy-efficient fan systems and HVAC systems that match reduced energy loads enables a building to meet energy demands at lower energy costs.
3. *Operate and maintain for energy efficiency*. Energy-efficient operations and maintenance ensure that energy-efficient products installed in the first two stages continue to produce benefits.

Source: U.S. EPA, 2004a.

Conversions to energy-efficient lighting systems in city buildings throughout Santa Rosa, California, have produced energy cost savings of approximately $122,000 per year. At an installed cost of about $300,000, this investment was expected to pay for itself in less than three years (Santa Rosa, 2003).[1]

ENERGY USE IN LOCAL GOVERNMENT BUILDINGS

This table presents average annual energy use by all commercial buildings (any building that is not residential, manufacturing, industrial, or agricultural) owned by local government.*

End Use	Consumption (trillion Btu)**	As Percentage of Whole
Space heating	$ 9	$ 9
Lighting	$ 1	$ 1
Cooling	$ 1	$ 1
Ventilation	$ 49	$ 49
Water heating	$ 3	$ 3
Miscellaneous	$ 5	$ 5
Refrigeration	$ 4	$ 4
Computers	$ 4	$ 4
Office equipment	$ 4	$ 4
Cooking	$ 2	$ 2
Total	$ 74	$ 74

*Data are from the 2003 Commercial Buildings Energy Consumption Survey (CBECS) conducted by the Energy Information Administration. The CBECS is conducted every four years.

**Figures are rounded to the nearest trillion Btu.

Source: EIA, 2008.

[1] *It is important to note that lumen output can be reduced when replacing conventional lamps with energy-efficient lamps of lower wattage. Thus, in some instances a lamp that uses less energy may not provide adequate lighting and so would reduce product effectiveness.*

- **Office equipment.** Office equipment can account for more than 4 percent of a typical government building's total electricity consumption (EIA 2003). This percentage can be even greater in offices where certain equipment is operated full-time during (and occasionally after) business hours. Energy-efficient product procurement policies often include specifications for energy-efficient computers, scanners, copiers, printers, and water coolers, many of which use up to 60 percent less energy than conventional products (U.S. EPA, 2009a). ENERGY STAR qualified computer monitors/displays use 25–60 percent less electricity than standard models, depending on how they are used. [U.S. EPA and U.S. DOE, Undated(a)].

Medford, Massachusetts, has adopted an energy efficiency policy that requires all new city equipment to be ENERGY STAR qualified. Energy-saving features must be enabled at all times, and all office equipment must be turned off after hours (Medford, 2005).

- **Building envelope components.** Local governments can achieve significant energy cost savings by purchasing and installing energy-efficient building envelope components, such as reflective roofing materials, insulation, and windows. These components can lower summertime heat gain, reduce infiltration of outdoor air, and prevent treated air from escaping. For more information on how local governments can incorporate energy efficiency into new and existing buildings, see EPA's *Energy Efficiency in Local Government Operations* guide in the *Local Government Climate and Energy Strategy Series*.

In addition, ENERGY STAR qualified roof products can reduce roof surface temperatures by up to 100˚ F, which can reduce energy bills by as much as 50 percent and peak cooling demand by 10–15 percent (U.S. EPA, 2008b). Reducing roof temperatures also helps to reduce the heat island effect. For more information on urban heat island reduction, see EPA's *Urban Heat Island Reduction* guide in the *Local Government Climate and Energy Strategy Series*.

Tucson, Arizona, reduced the average weekday cooling energy load for one of its government facilities by almost 50 percent by purchasing and installing an energy-efficient "cool roof" (Gartner, 2002).

- **Water-using products.** Heating and pumping water requires a significant amount of energy. For example, an electric water heater requires 0.1 kWh to 0.2 kWh to heat one gallon of water (e.g., for showers, washing dishes) (U.S. DOE, 2000). According to the American Water Works Association, the energy required to pump purchased water for end use is approximately 0.6 kW per 1,000 gallons distributed (Universities Council on Water Resources, 1999). Local governments can save energy by purchasing water-efficient products, such as water fountains, faucets, toilets, and outdoor irrigation equipment.

EPA WATERSENSE LABEL

The EPA WaterSense Program label is for products that are independently tested to meet water efficiency and performance criteria. Labeling criteria have been established for plumbing fixtures (toilets, faucets, showerheads, and urinals), new homes, and training programs for irrigation professionals. In general, products that receive the WaterSense label are 20% more water-efficient than conventional products. In addition to conserving water, these products can reduce the amount of energy required to deliver and treat water.

Source: U.S. EPA, 2007f.

San Francisco, California's Precautionary Purchasing Ordinance requires city agencies to replace all conventional toilets, which can use up to five gallons of water per flush, with water-efficient ones that require only 1.6 gallons, thus reducing the amount of per-flush energy required for water pumping (San Francisco, 2003; U.S. EPA, 2007a).

HVAC system components. Heating and cooling systems can consume considerable amounts of energy, especially in extreme climates where energy demands on chillers and central heating equipment are greater. According to the most recent CBECS data, the typical HVAC system accounts for over 60 percent of local government owned buildings' total energy consumption (EIA, 2008).[2] Energy-efficient light commercial HVAC equipment[3] can use up to 10 percent less energy than conventional equipment, translating into savings of approximately $3–4 per square foot over the lifetime of the equipment [U.S. EPA and U.S. DOE, Undated(b)].

After passing an energy-efficient product procurement ordinance in 2001, San Diego, California, purchased and installed energy-efficient variable speed drives for HVAC pumps and motors and high-efficiency water chillers at four of its government facilities. These investments have produced energy cost savings of more than $250,000 (San Diego, 2001; San Diego, Undated).

For more information on energy savings and payback periods for a variety of energy-efficient products, see Table 2, *ENERGY STAR Specification Overviews: Energy Savings and Payback Periods* on page 14.

- **Data centers/servers.** According to EPA, data centers will account for nearly 3 percent of total U.S. electricity consumption by 2011. Computer servers contribute greatly to this consumption. Deploying more energy-efficient servers can be a key strategy to reduce total data center energy consumption [U.S. EPA and U.S. DOE, Undated(c)]. By purchasing and deploying ENERGY STAR computer servers, local agencies can use up to 30 percent less energy than when using standard servers.

2 Installing energy-efficient HVAC equipment after reducing energy loads (i.e., in a staged approach) can produce greater energy cost savings.

3 Light commercial HVAC products include central air conditioners and heat pumps used in small office buildings, medical facilities, hotels, dorms, military barracks, malls, and other locations. These units use 65,000–250,000 Btu per hour (U.S. EPA, 2002).

4. KEY PARTICIPANTS

A number of participants can be key in planning and implementing energy-efficient product procurement policies, including:

- **Mayor or county executives.** The mayor or county executive can provide increased visibility for energy-efficient product procurement activities. Often the initiative for an energy-efficient product procurement policy comes from the executive level. When the mayor or county executive is not the source of the initiative, local governments have found it important to gain his or her support. This can increase public awareness and sustain momentum through the implementation and operation stages.

- **City or county councils.** Elected officials play important roles in planning energy-efficient product procurement activities because their support is often needed to adopt or modify procurement policies. Local governments have found that gaining the support of higher level policymakers can also ensure an activity is continuously funded and implemented.

- **Environment and energy departments.** Staff from energy and environment departments can provide critical technical knowledge about the energy and environmental attributes of products. They can also help develop scoring criteria for product alternatives and provide assistance with quantifying and articulating the benefits of energy-efficient product procurement. Promoting the energy, environmental, economic, and other benefits of improving energy efficiency and of purchasing energy-efficient products can be an effective way to engage personnel from these departments.

ENERGY STAR PRODUCT SAVINGS CALCULATORS

More than 40 product calculators are available that illustrate the cost-effectiveness of selecting ENERGY STAR-qualified products. Purchasers can use these tools to quantify the financial benefits of energy efficiency when making the case for purchasing energy-efficient products to product specifiers.

Calculators can be found at *http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing*

Source: U.S. EPA, 2007i.

- **Local government purchasers.** While the decision to implement energy-efficient product procurement policies is typically made by a higher level government official, the purchasing department and individual purchasers are ultimately responsible for ensuring that purchasing policies are enforced. Local governments have found it is essential to involve purchasers throughout the planning and implementation processes because their buy-in and understanding of the policy is critical.

- **Local government product specifiers.** Local government purchasers receive frequent product requests from information technology (IT) departments and facility management departments because these departments typically require large quantities of electronics and other energy-using equipment. Local governments can work with their IT and facility management departments to ensure they specify energy-efficient products when possible.

- **Employees, maintenance teams, and other end-users.** Merely procuring energy-efficient products does not necessarily mean the products will achieve their projected energy saving potential. Local governments have found it is important that individuals who operate and maintain the products do so in a manner that enables them to perform at maximum efficiency. Providing end-users with information on energy-efficient operations and maintenance activities (e.g., through training sessions) can produce greater energy savings and prolong the usable lives of the products. Examples of such activities include enabling the duplex function on copiers; enabling sleep mode on computers, monitors, copiers, faxes, and scanners; and keeping refrigerator coils clean.

- **State purchasing agencies.** Local governments sometimes use resources and contacts established by state government purchasers to procure energy-efficient products.

- **Energy service companies (ESCOs).** Many local governments work with ESCOs to purchase, install, maintain, and monitor energy-efficient products. Energy-efficient equipment and services can often be obtained through performance contracts, which allow governments to make payments to ESCOs using the energy cost savings generated.

WISCONSIN VENDORNET SYSTEM

The Wisconsin VendorNet system is the purchasing authority for the state. VendorNet provides cooperative purchasing opportunities for other entities, including counties, cities, and school and utility districts. These entities are provided access to state bids and contracts through a Web site that is monitored by the Department of Administration's Energy Division. Cooperative purchasing allows state departments and other entities, such as local governments, to achieve lower costs through large-volume purchases. Staff members work with purchasing agents to specify ENERGY STAR qualified products, where available

Source: Harris et al., 2004.

NEW YORK CITY COUNCIL ENERGY-EFFICIENT PRODUCTS RESOLUTION

The New York City Environmental Purchasing Program was initiated in 1989 with a city recycling law that required purchasers to give preference to products with recycled content. In 2003 the city council passed Local Law 30, which required that energy-using products procured by the city be ENERGY STAR qualified.

In December 2005, the city council issued five local laws that addressed EPP procurement, including Local Law 119, which expanded the scope of Local Law 30 by requiring that city agencies purchase products that meet ENERGY STAR specifications. For certain water-using and lighting fixtures, the policy requires that agencies purchase products that meet both Federal Energy Management Program and ENERGY STAR specifications.

Sources: NYC Department of Sanitation, 2007..

5. FOUNDATIONS FOR PROGRAM DEVELOPMENT

Local governments have used several mechanisms to establish energy-efficient product procurement policies or modify existing procurement policies to include energy-efficient product specifications, including:

- **Local government resolutions.** A number of local governments have established energy-efficient product procurement policies through resolutions. This mechanism can be particularly effective in making energy-efficient product procurement policies binding and permanent. In addition, a resolution can increase public awareness by providing a clear articulation of a local government's specific energy efficiency goals.

Santa Clarita, California, used a city council resolution to establish its EPP procurement policy. The policy includes a requirement that agencies specify ENERGY STAR qualified products, and where ENERGY STAR has not developed specifications, agencies must specify products with energy performance in the top 25 percent of their product type, as designated by the Federal Energy Management Program (FEMP) (Santa Clarita, 2005).

The Albuquerque, New Mexico City Council passed a resolution that directs the Department of Finance and Administration and the Energy Conservation Council to develop specifications for city purchases of products that maximize energy efficiency (Albuquerque, 2006).

USING MODEL POLICIES AND RESOLUTIONS

When developing energy-efficient product procurement policies, many local governments have borrowed from or adapted model policies, such as the National Association of Counties model resolution for purchasing EPPs, available at: *http://www.naco.org/Content/ContentGroups/Programs_and_Projects/Environmental1/Energy/NACos_Environmental_Purchasing_Starter_Kit.htm*.

Some county governments have developed model energy-efficient procurement policies with resources for local governments within the county. Alameda County, California, has developed a model procurement policy and implementation guidance to assist local governments in its jurisdiction. The policy includes specifications for ENERGY STAR qualified products. Several California communities, including Oakland and Santa Clarita, have adopted the model.

Sources: Alameda County, 2003; Santa Clarita, 2005; Oakland, 2007..

Some resolutions have also established programs to provide incentives to local residents and businesses for purchasing energy-efficient products.

Lodi, California, used a city council resolution to authorize the city manager to provide a public benefits program grant to create and fund the Residential HVAC Rebate Project (Lodi, 2000).

- **Mayor or executive initiatives.** In some local governments, mayors, or county executives have been the sources of energy-efficient product procurement policies.

In 2007, the mayor of Raleigh, North Carolina, announced the "LED City" initiative to install LED light bulbs in city parking garages, buildings, sports fields, and streetlights. The mayor has pledged the city's commitment to present the benefits of energy-efficient LEDs to businesses and residents at conferences and other information sessions (Raleigh, 2007).

In Lansing, Michigan, the mayor issued an executive order in 2007 directing all local government agencies to purchase ENERGY STAR qualified products (Lansing, 2007).

ENSURING CLARITY OF ENERGY-EFFICIENT PRODUCT PROCUREMENT POLICY LANGUAGE

While senior officials may be responsible for issuing energy-efficient product procurement policies, lower level employees are often responsible for ensuring these policies are implemented effectively and continue to produce results. Ambiguous definitions of "energy-efficient" or "environmentally preferable" products can result in inconsistency, especially in governments where procurement activities are decentralized. It is important to ensure that policy language is clear and consistent so that it will be effective.

Source: Case, 2004.

- **Local government planning processes.** Some local governments have incorporated energy-efficient product procurement goals into planning documents. Other local governments have produced plans for implementing energy-efficient product procurement. In some instances, local governments have included energy-efficient product procurement goals in climate action plans.

Philadelphia, Pennsylvania, adopted the Local Action Plan for Climate Change that requires all bid solicitations and public works and equipment requests for proposals (RFPs) to include specifications for purchasing ENERGY STAR qualified products and energy-efficient premium electric motors (Philadelphia, 2007).

Some local governments have modified or designed procurement policies to give preference to energy-efficient products. Strategies used to modify procurement policies include:

- ***Allow price flexibility.*** Some local governments, while encouraging purchasers to identify least first-cost opportunities, allow a certain degree of flexibility to pursue energy-efficient options.

Nevada County, California's purchasing policy, for example, uses language that provides purchasers with the flexibility to balance energy, environmental, and financial concerns by allowing the procurement of EPPs that are not "unreasonably expensive" (Alameda County, 2003).

Santa Monica, California, uses the term "lowest responsible bid" as opposed to "lowest bid" in its Environmentally Preferable Purchasing policy (SCCED, 2000).

- ***Establish price preferences.*** Local governments have used price preferences to increase the prices they are willing to pay for energy-efficient products. A price preference is a specified percentage (typically 5–15 percent) that a local government will allow the price of an energy-efficient product to exceed the cost of a conventional product and still give equal consideration. In this way, price preferences can place energy-efficient products with cost premiums on level ground with conventional products and overcome least-first cost requirements.

A city ordinance in Kansas City, Missouri, for example, allows purchasers to assign a price preference for EPPs of up to 15 percent. This means that EPPs that are up to 15 percent more expensive than conventional products can still meet least-cost requirements (Kansas City, 1998).

- ***Require life-cycle cost accounting.*** Local governments can use life-cycle cost accounting to make energy-efficient products competitive with conventional products when making purchasing decisions.

A number of local governments, such as Boulder, Colorado, have authorized purchasers to use life-cycle cost accounting to procure products that may have higher initial costs but lower total costs over their lifetimes (Case, 2004).

FOCUSING ON LIFE-CYCLE COSTS

Some local governments have policies that require purchasers to use a least first-cost approach when selecting products. Least-cost requirements can present an implementation barrier for energy-efficient product procurement because such products can have slightly higher initial costs. When initial costs of the products are higher than the costs of conventional products, local governments have found it is important to consider the life-cycle cost savings of the energy-efficient products. Over its lifetime, an energy-efficient product almost always has lower energy and maintenance demands. These benefits typically offset any initial cost premium.

6. STRATEGIES FOR EFFECTIVE PROGRAM IMPLEMENTATION

When implementing energy-efficient product procurement programs, local governments have used several approaches to enhance program effectiveness. Some of these approaches are fundamental to establishing most energy-efficient product procurement programs (Tier One Strategies), while others are more advanced features that can be incorporated into program plans to achieve enhanced benefits (Tier Two Strategies).

EFFECTIVE PROGRAM IMPLEMENTATION

Strategies for effective implementation of energy-efficient product procurement programs can be divided into two tiers: Tier One Strategies are fundamental to establishing most energy-efficient product procurement programs, while Tier Two Strategies are more advanced and can lead to enhanced benefits.

Tier One Strategies

- Borrow from sample procurement language
- Collect baseline information on energy consumption
- Create strong links between purchasing departments and energy, environment, and IT departments
- Develop a list of pre-approved or priority products
- Ensure proper end-of-life management
- Initiate pilot activities
- Involve employees, maintenance teams, and other end-users
- Use energy efficiency standards and specifications

Tier Two Strategies

- Aggregate purchases
- Combine energy-efficient product procurement with other energy efficiency activities
- Develop scoring guidance
- Engage the community

Tier One Strategies

- **Borrow from sample procurement language.** Local governments can use model contract language to specify energy-efficient products when making purchases. Model contract language can be borrowed from other local and state governments, federal government agencies, and nongovernmental organizations. ENERGY STAR and FEMP, for example, provide general procurement contract language for purchases of energy-efficient products (U.S. EPA, 2008c; FEMP, 2007).

- **Collect baseline information on energy consumption.** Collecting baseline energy consumption information before establishing energy-efficient product procurement policies can help local governments identify their best opportunities for capturing energy cost savings. For example, local governments can focus on replacing particularly inefficient products or eliminating energy-wasteful practices (such as leaving lights on during nonworking hours). By assessing baseline information, local governments can also identify specific agencies that would benefit most from energy-efficient products, or agencies that could be expected to most easily adapt to the new policy. Baseline information can be collected through surveys and questionnaires of government purchasers.

- **Create strong links between the purchasing department and energy, environment, and IT departments.** Fostering collaboration between these departments can significantly enhance the benefits of energy-efficient product procurement activities by bringing together individuals with technical expertise in complementary subjects. Purchasers, who are familiar with vendors and purchasing procedures, can consult with energy and environment staff to identify priority energy-efficient products and quantify the benefits of energy-efficient product procurement policies (e.g., by using ENERGY STAR's product savings calculators, described in the text box on page 6). Purchasers can also work with staff from IT and facilities management departments, which are often responsible for specifying office electronics and implementing energy efficiency policies, such as enabling sleep modes on office electronic equipment.

- **Develop a list of pre-approved or priority products.** When vendors use different definitions of "energy-efficient" and "environmentally preferable," purchasers are required to spend time analyzing the relative attributes of each product. Some local governments have addressed this barrier and improved the effectiveness of their energy-efficient product procurement by developing a list of pre-approved or priority products. In addition to streamlining the purchasing process, having a list of pre-approved products and vendors can enable purchasers to aggregate orders, which can sometimes lead to lower costs.

In Kitsap County, Washington, the Prevention of Waste in County Government ordinance requires the county purchasing division to develop a preferred product database to be used by each government agency (Kitsap County, 1999).

- **Ensure proper product end-of-life management.** When local governments purchase new or alternative products, they must decide what to do with the replaced products. Many local governments have instituted policies for donating or recycling replaced electronics. These policies often require purchasers to include "take back" language in procurement contracts and leasing agreements that obligate the product vendor to take back the replaced equipment (CIWMB, 2008).[4]

Tacoma, Washington, for example, has partnered with Pierce County to develop the Take it Back Network, a partnership between government agencies, retailers, and recyclers, to enable consumers to conveniently recycle electronics (Tacoma, 2006).

Santa Clarita, California's Environmentally Preferable Purchasing policy includes a requirement that vendors who install energy-efficient lighting must recycle the lighting fixtures and lamps that are removed (Santa Clarita, 2005).

- **Initiate pilot projects.** Local governments can consider initiating pilot or demonstration projects to help identify priority products, best practices for ordering, and potential implementation challenges. Certain departments or agencies, such as an energy, environment, or IT department, may be the best equipped to implement pilot projects. Pilot projects can begin by focusing on one type of product, gradually incorporating multiple product types as purchasers collect sufficient knowledge to apply the project on a broader scale [NACo, 2008].

Redondo Beach, California, initiated a pilot project that involved installing energy-efficient products in city facilities for a trial period of 60–90 days. The city negotiated to have the installations performed at no cost and used the trial period to determine whether the energy cost savings were sufficient to consider longer term contracts for the products (Flex Your Power, 2009).

- **Involve employees, maintenance teams, and other end-users.** Involving these individuals in the policy planning process will ensure that energy-efficient product procurement activities account for the special needs of those who will use and maintain the equipment, which can lead to increased buy-in. In addition, training the individuals who will use and maintain energy-efficient products can ensure that energy-efficient features are enabled, prolong the lives of the products, and increase energy cost savings as a result of appropriate product use [NACo, 2008].

When Santa Monica, California, adopted its Environmentally Preferable Purchasing program, it provided its employees with training and educational opportunities that helped increase motivation and participation (SCCED, 2000).

[4] *Local governments can go a step further by requiring vendors to guarantee that replaced products will be re-manufactured in some form.*

- **Use energy efficiency standards and specifications.** Many local governments use federal standards or third-party certification for energy-efficient products. Using established standards streamlines the procurement process and can lead to greater energy benefits because products will be required to meet minimum performance specifications. A number of local governments require purchasers to specify ENERGY STAR qualified products. ENERGY STAR has developed energy efficiency specifications for more than 60 product categories. For some categories where ENERGY STAR specifications do not exist, FEMP identifies energy-efficient products that perform in the top 25 percent in terms of energy performance (FEMP, 2007).[5] In addition to national standards such as ENERGY STAR, some local governments have established their own energy efficiency specifications.

Multnomah County, Oregon, contracted with engineers to develop energy efficiency standards for several products. These standards were submitted to a specification writer who developed procurement specifications for the standards (Multnomah County, 2010).

ENERGY STAR QUALIFICATION

The ENERGY STAR program has developed specifications for energy-efficient products in more than 60 product categories. EPA and DOE work together to develop unique energy performance specifications that a product must meet to qualify. ENERGY STAR qualified products typically use 10–75 percent less energy and can offer consumers energy cost savings as high as 75 percent over conventional products.

Local governments often include requirements in energy-efficient product procurement policies for purchasers to specify products that are ENERGY STAR qualified. Washington, DC, for example, passed a law in 2004 to amend its procurement policy to require agencies to include specifications for ENERGY STAR qualified products in solicitations for energy-using products.

Source: U.S. EPA, 2009a; U.S. EPA, 2008a; LBNL, 2003; Washington, DC, 2004.

Tier Two Strategies

- **Aggregate purchases.** By combining the needs of multiple departments, or even multiple jurisdictions, local governments can potentially negotiate with vendors for reduced or wholesale prices. By partnering with other governments, local governments can pool resources and experience, and take advantage of the different areas of expertise between staffs. In addition to improving the feasibility of energy-efficient product procurement, these partnerships can increase public awareness and have a greater influence on market demand for energy-efficient products. Some states, such as Wisconsin, allow local governments to use state government contracts to aggregate purchases (Harris et al., 2004).

- **Combine energy-efficient product procurement with other energy efficiency activities.** Even the most effectively implemented energy-efficient product procurement activities can be improved by integrating them into comprehensive energy efficiency programs. This can be especially true when equipment is right-sized to meet the functional requirements of a building's conditioning systems, as over-sized equipment uses more energy when operating and tends to cycle on-off more frequently, which can increase maintenance costs (Harris et al., 2004).

- **Develop scoring guidance.** Purchasers often must select between comparable products, weighing the relative energy and environmental attributes (e.g., energy efficiency, water conservation, material waste reduction) before making decisions (U.S. EPA, 2000). This process can be time-intensive, and without adequate guidance can lead to inconsistent purchasing practices across government agencies. Developing a scoring sheet that incorporates these issues can help purchasers make consistent decisions.

- **Engage the community.** Local governments can improve awareness about the benefits of energy-efficient product procurement by engaging local businesses and residents. A number of local governments have implemented energy-efficient procurement activities that involve community outreach components.

5 *FEMP's specifications are consistent with ENERGY STAR's in categories where ENERGY STAR specifications exist (FEMP, 2007).*

SAN FRANCISCO PRODUCT SCORING

The San Francisco Precautionary Purchasing Ordinance, passed in 2005, requires agencies to purchase only city-approved EPPs.

To help implement this policy, the city Department of the Environment and Office of Contract Administration worked together to develop lists of EPPs for product categories of highest environmental priority. In developing these targeted product lists, the agencies held three public meetings to establish a set of 11 energy and environmental criteria for comparing products. For example, efficient use of resources and minimal impact on the global environment was a criterion.

These criteria, along with a set of implementation issues (e.g., savings potential), were used to create a score sheet that assesses points for each product. Those that earned the best scores in their category were added to the lists of approved products.

Source: SF Environment, 2006; SF Environment, 2007b.

In Arlington County, Virginia, the Arlington Initiative to Reduce Emissions (AIRE) is a collaborative started by the county government that encourages county businesses, organizations, and individuals to reduce emissions. AIRE helps members partner with ENERGY STAR and obtain ENERGY STAR qualified products (AIRE, Undated).

Scottsdale, Arizona, offers free public seminars on energy-efficient products as part of its Green Building Program (Scottsdale, 2007).

Some local governments, such as Austin, Texas, and Riverside, California, have enhanced the community-level benefits of energy-efficient product procurement through programs that provide financial assistance to residents for obtaining energy-efficient products (Austin Energy, 2007; Riverside, 2007). Local governments can also use their purchasing power to obtain energy-efficient products in bulk at reduced prices. These products can then be sold to residents and businesses at below-market costs (Flex Your Power, 2009).

The village of Akron, New York, established an ENERGY STAR Appliance Advantage Program that provides the municipal electric utility's customers with rebates of up to $125 for purchasing ENERGY STAR qualified home appliances (Akron, 2007).

- **Integrate multiple energy and environmental mandates.** When developing and implementing energy-efficient product procurement policies, many local governments have combined energy efficiency goals with other environmental goals to produce a comprehensive program. This approach can make energy-efficient product procurement policies more enticing to elected officials and help ensure continuous high-level support (Harris et al., 2004). This approach also helps to make sure that energy-efficient product procurement does not conflict with other environmental or socioeconomic purchasing goals and requirements. For example, procurement policies can include specifications that printers and copiers be ENERGY STAR qualified and be capable of duplex printing to minimize paper use.

7. COSTS AND FUNDING OPPORTUNITIES

While energy-efficient products can typically be purchased at no additional cost, local governments sometimes find that they do have cost premiums. This section provides information on the cost of implementing energy-efficiency product procurement and describes funding opportunities for addressing cost premiums.

Costs

Local governments typically implement energy-efficient product procurement at low- or no-cost simply by purchasing energy-efficient products on the same replacement schedule that they would otherwise purchase conventional replacements. The cost of energy-efficient product procurement is typically only as great as the cost premium for energy-efficient products compared to conventional ones. For many products, such as office equipment and electronics, there is no cost premium, making energy-efficient product procurement an especially cost-effective clean energy activity.

Other energy-efficient products, such as refrigerators, freezers, HVAC systems, and lighting fixtures, do have cost premiums. The premiums, however, are almost always offset by energy cost savings within a few years. Table 2, *ENERGY STAR Specification Overviews: Unit Savings and Payback Periods*, provides information on a sample of ENERGY STAR qualified products, including energy savings and payback periods. For most of the products identified in the table, there is typically no cost premium and thus no payback period.

TABLE 2. ENERGY STAR SPECIFICATION OVERVIEWS: ENERGY SAVINGS AND PAYBACK PERIODS

Product Category	Percent Energy Savings Compared to Conventional Product	Payback Period
Appliances		
Dehumidifiers	15%	0 years (typically no retail cost premium)
Dishwashers	30%	2 years[a]
Refrigerators and freezers	20% (refrigerators) 10% (freezers)	3 years
Room air cleaners	40%	0 years (typically no retail cost premium)
Room air conditioners	10%	Varies Regionally
Electronics		
Battery charging systems	30%	0 years (typically no retail cost premium)
Combination units	60%	0 years (typically no retail cost premium)
Cordless phones	55%	0 years (typically no retail cost premium)
DVD products	35%	0 years (typically no retail cost premium)
External power adapters	5%	0 years (typically no retail cost premium)
Home audio systems	30%	0 years (typically no retail cost premium)
Televisions	15%	0 years (typically no retail cost premium)
Envelope		
Roof products	NA	0 years (typically no retail cost premium)
Windows, doors, and skylights	7–24%	Varies Regionally
Lighting		
Compact fluorescent lamps	75%	<1 year
Residential-style light fixtures	75%	<2 years
Office Products		
Computers	30%	0 years (typically no retail cost premium)
Copiers	10%	0 years (typically no retail cost premium)
Monitors	20%	0 years (typically no retail cost premium)

TABLE 2. ENERGY STAR SPECIFICATION OVERVIEWS: ENERGY SAVINGS AND PAYBACK PERIODS *(cont.)*

Product Category	Percent Energy Savings Compared to Conventional Product	Payback Period
Multifunction devices	15–30% (laser v. inkjet)	0 years (typically no retail cost premium)
Printers, fax machines, and mailing machines	10%	0 years (typically no retail cost premium)
Scanners	10%	0 years (typically no retail cost premium)
Heating and Cooling		
Air source heat pumps	10%	Varies Regionally
Boilers	5%	<5 year
Ceiling fans	45% (with light kit) 10% (fan only)	<4 years
Furnaces	15%	<3 years
Geothermal heat pumps	30%	Varies Regionally
Light commercial HVAC	5%	Varies Regionally
Ventilating fans	70%	0 years (typically no retail cost premium)
Commercial Food Service		
Commercial dishwashers	30%	2 years (for typical unit)
Commercial fryers	5% (electric)	<3 years
Commercial hot food holding cabinets	30% (gas)	<5 years
Commercial ice makers	65%	<3 years
Commercial refrigerators & freezers—solid door	15%	<2 years (preliminary assessment)
Commercial steam cookers	35%	<2 years
Other	50% (electric)	Other
Water coolers	35% (gas)	0 years (typically no retail cost premium)
Vending machines	Other	0 years (typically no retail cost premium)

[b] ENERGY STAR develops performance-based specifications to determine the most energy-efficient products in a particular product category. These specifications, which are used as the basis for ENERGY STAR qualification, are developed using a systematic process that relies on market, engineering, and pollution savings research and input from industry stakeholders. Specifications are revised periodically to be more stringent, which has the effect of increasing overall market energy efficiency (U.S. EPA, 2007h). EPA and DOE screen all the specifications annually to determine if any require reassessment. These assessments may lead to a specification revision, a specification being sunset, or no action being taken depending on market readiness for the next level. To view current ENERGY STAR criteria, please visit *http://www.energystar.gov/index.cfm?c=product_specs.pt_product_specs.* To view specifications that are under review or revision, please visit *http://www.energystar.gov/index.cfm?c=prod_development.prod_development_index*.

Source: U.S. DOE, 2009; U.S. EPA, 2009b.

Funding Opportunities

Local government funding opportunities for energy-efficient product procurement include:

- **Energy conservation savings.** Local governments can use a "paid from savings" approach to finance purchases of energy-efficient products that have cost premiums by reserving energy cost savings generated from their energy efficiency activities to pay for the products.

In 1984, Phoenix, Arizona, established the Energy Conservation Savings Reinvestment Plan. A reinvestment fund was created using money collected from a state oil overcharge. Under the reinvestment plan, half the city's annual energy cost savings from energy efficiency improvements funded through the plan are reinvested in the fund to provide for future improvements. The fund has been used to finance the costs of new energy-efficient equipment in city buildings (ICLEI, 2007).

- **Lease-purchase agreements.** A tax-exempt lease-purchase agreement (also known as a municipal lease) allows public entities to finance purchases and installation over long-term periods using operating budget dollars rather than capital budget dollars.

Boulder, Colorado, uses operating budget dollars and capital investment plan funds (which are designed to automatically fund upgrades at the end of a piece of equipment's useful life) to pay for energy-efficient equipment purchased through lease-purchase agreements (Colorado Energy, 2007).

Lease-purchase agreements typically include "nonappropriation" language that limits obligations to the current operating budget period. If a local government decides not to appropriate funds for any year throughout the term, the equipment is returned to the lessor and the agreement is terminated. Because of this nonappropriation language, lease-purchase agreements typically do not constitute debt. Under this type of agreement, a local government makes monthly payments to a lessor (often a financial institution) and assumes ownership of the equipment at the end of the lease term, which commonly extends no further than the expected life of the equipment. These payments, which are often less than or equal to the anticipated savings produced by the energy efficiency improvements, include added interest. The interest rates that a local government pays under these agreements are typically lower than the rates under a common lease agreement because a public entity's payments on interest are exempt from federal income tax, meaning the lessor can offer reduced rates (U.S. EPA, 2004b).

CASH FLOW OPPORTUNITY CALCULATOR

The ENERGY STAR Cash Flow Opportunity Calculator is a decision-making tool that can inform decisions pertaining to the timing of energy-efficient product purchases. The tool can be used to determine:

- The quantity of energy-efficient equipment that can be purchased and financed using anticipated savings;
- Whether it is most cost-effective for the purchase to be financed now, or to be paid for using future operating funds; and
- Whether money is being lost while waiting for a lower interest rate.

Web site:
http://www.energystar.gov/index.cfm?c=assess_value.financial_tools

Source: U.S. EPA, 2003b.

BENEFITS OF TAX-EXEMPT LEASE PURCHASE AGREEMENTS

- No need for capital budget appropriation
- No delay for voter referendum
- Monetary obligation limited to current budget period
- Reduced interest rates
- Can be used to underwrite guaranteed savings performance contracts
- Repayment can be tied to energy cost savings

Unlike bonds, initiating a tax-exempt lease-purchase agreement does not require a voter referendum to approve debt, a process that can delay energy efficiency improvements. Tax-exempt lease-purchase agreements typically require only internal approval and an attorney's letter, which often takes only one week (as opposed to months or years for bonds). Local governments can expedite the process by adding energy efficiency projects to existing tax-exempt lease-purchase agreements. Many local governments have master lease-purchase agreements in place to finance a range of capital investment projects. Energy-efficient product procurement can often be added to these agreements without difficulty (U.S. EPA, 2004b).

- **Performance contracting.** An energy performance contract is an arrangement with an ESCO that bundles together various elements of an energy-efficiency investment, such as installation, maintenance, and monitoring of energy-efficient equipment. These contracts, which often include a performance guarantee to ensure the investment's success, are typically financed with money saved through reduced utility costs but may also be financed using tax-exempt lease-purchase agreements (U.S. EPA, 2003c).

Compton, California, entered a performance contract to install energy-efficient equipment at a number of its facilities, including new lighting systems with occupancy sensors, street lighting fixtures, chillers, and energy efficiency management controls. The performance contract, which will be paid for with guaranteed energy efficiency savings, is expected to produce savings of more than $4.4 million over 15 years (Johnson Controls, 2007).

Tax-exempt lease-purchase agreements are sometimes used to underwrite energy performance contracts with ESCOs. While local governments can often obtain financing directly from ESCOs, many have found that the interest rates available through tax-exempt lease-purchase agreements are typically lower than the rates offered by ESCOs. The agreements can be especially effective when used to underwrite energy performance contracts that include guaranteed savings agreements, under which an ESCO agrees to reimburse any shortfalls in expected energy cost savings.

WESTMINSTER, COLORADO—LEASE-PURCHASE AGREEMENT

The city council in Westminster, Colorado, passed a resolution in 2005 that authorized the city to enter into a lease-purchase agreement to purchase and install approximately $2.5 million in energy-efficient equipment in 21 city facilities. The city issued an RFP for financing bids for the project and the city was able to settle on a lease-purchase agreement with a low interest rate of 3.79 percent. The city council considered cash-funding the purchase, but determined that capital improvement budget constraints would mean the project would have to be implemented piecemeal over 8–12 years.

Source: Westminster, 2005.

- **Private foundations.** Foundations are nonprofit organizations or charitable trusts that can help fund local energy efficiency activities. The most common types of financing include grants (which do not have to be repaid) and program-related investments (which are usually set up with a repayment schedule).

The Illinois Clean Energy Community Foundation, for example, administers seven indoor lighting programs that provide grants to local government entities, including schools, county courthouses, and public safety facilities, to assist in purchasing and installing energy-efficient lighting systems (ICECF, 2007).

- **Public benefits funds.** Public benefits funds (PBFs) are supported by system benefits charges applied to utility customers' bills. These funds, which are invested in programs that benefit the public, can be applied to local government energy-efficient product procurement. A number of local governments have partnered with state PBF-funded programs to purchase energy-efficient products.

Tigard, Oregon, received a rebate from the PBF-funded Energy Trust of Oregon to help offset the cost of purchasing energy-efficient equipment (Tigard, 2007).

- **State programs.** Some states administer programs that provide technical and financial assistance to local governments for purchasing energy-efficient products.

The Mississippi Energy Division, for example, administers the Energy Efficiency Lease Program that offers local governments access to pre-arranged tax-exempt lease-purchase agreements with third-party financiers. These agreements can be used to finance purchases and installation of energy-efficient equipment for terms of up to 10 years (Mississippi, 2009).

- **Utility assistance.** A number of electric utilities offer assistance to local governments through energy efficiency programs. These programs sometimes allow local governments to obtain energy-efficient products at reduced costs or to purchase and install energy-efficient products at no up-front cost.

Public Service of New Hampshire, for example, administers the Municipal Smart Start Loan Program through which it purchases and installs energy-efficient products for local governments. The governments are assessed a purchase and installation charge on their monthly utility bills until the products and services are paid off. This charge is designed to be less than the cost savings generated from the energy efficiency investments. Claremont, New Hampshire used this program to purchase energy-efficient T8 lighting systems with occupancy sensors, LED exit signs, and more than 1,000 streetlights (NEEP, 2006).

8. FEDERAL, STATE, AND OTHER PROGRAM RESOURCES

A variety of federal, state, and regional agencies and organizations provide resources that local governments can use when planning and implementing energy-efficiency product procurement activities.

Federal Programs

- **ENERGY STAR.** The ENERGY STAR program provides information and tools on purchasing and procurement that can assist local governments in identifying and procuring products that meet ENERGY STAR energy efficiency qualifications. The program provides lists of energy-efficient products with performance specifications, product savings calculators for assessing the cost-effectiveness of purchasing these products, sample procurement language, product retailer locators, and case studies. In addition, the program provides guidance on developing a comprehensive energy-efficient product procurement policy.

Web sites:

Case studies:
http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing_key_benefits

Sample procurement language:
http://www.energystar.gov/index.cfm?c=bulk_purchasing.pr_proc_generic

Savings calculators:
http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing

Retailer locator:
http://www.energystar.gov/index.cfm?fuseaction=store.store_locator

Product specifications:
http://www.energystar.gov/index.cfm?c=prod_development.prod_development_index

- **U.S. DOE Federal Energy Management Program (FEMP).** FEMP works with federal agencies to increase energy efficiency, water conservation, and use of renewable energy sources in federal government operations. Local government purchasers can obtain guidance from FEMP's many information resources, including its Product Energy Efficiency Recommendations publication, which contains energy efficiency fact sheets that can be used when reviewing energy-efficient products and developing preferred product lists.

  Web site: *http://www1.eere.energy.gov/femp/*

- **U.S. EPA Environmentally Preferable Purchasing program.** The program encourages purchasers to consider the multiple types of environmental impacts of the products they purchase. The program's Web site provides tools and information resources to assist purchasers in selecting EPPs. The program has developed the Environmentally Preferable Purchasing Database, which provides information on products and services arranged by category.

  Web site: *http://www.epa.gov/epp/index.htm*

- **U.S. EPA State and Local Climate and Energy Program.** This program assists state, local, and tribal governments in meeting their climate change and clean energy efforts by providing technical assistance, analytical tools, and outreach support. It includes two programs:

  - The ***Local Climate and Energy Program*** helps local and tribal governments meet multiple sustainability goals with cost–effective climate change mitigation and clean energy strategies. EPA provides local and tribal governments with peer exchange training opportunities and financial assistance along with planning, policy, technical, and analytical information that support reduction of greenhouse gas emissions.

  - The ***State Climate and Energy Program*** helps states develop policies and programs that can reduce greenhouse gas emissions, lower energy costs, improve air quality and public health, and help achieve economic development goals. EPA provides states with and advises them on proven, cost–effective best practices, peer exchange opportunities, and analytical tools.

  Web site: *http://www.epa.gov/statelocalclimate/*

- **U.S. EPA WaterSense Program.** WaterSense is a voluntary program that encourages efficient use of the nation's water resources. WaterSense has developed a system for labeling water-using products and services that meet EPA water efficiency standards. WaterSense-labeled products typically use 20 percent less water than conventional products.

  Web site: *http://www.epa.gov/watersense/index.html*

State Programs

Many state governments have adopted energy-efficient product procurement policies and have collected information on product performance, purchasing best practices, and implementation challenges. Local governments can build on the knowledge collected through these state government activities.

In Texas, the State Energy Conservation Office (SECO) provides local governments with assistance in improving energy efficiency in local government facilities and operations through its Energy Efficiency Partnership. SECO offers information resources and technical assistance on purchasing energy-efficient equipment, including assistance with developing energy efficiency standards for product categories (SECO, 2007).

NEW YORK STATE LOCAL GOVERNMENT ENERGY-EFFICIENT PRODUCT PROCUREMENT

As part of its Energy $mart initiative, NYSERDA administers the New York State Local Government Energy-Efficient Product Procurement Program (GEEP-NY) to provide local government officials with tools, education, and guidance in purchasing or leasing ENERGY STAR equipment. These resources include fact sheets, case study briefs, demonstration projects, an electronic resource center, a model for estimating savings potential, and a "how-to" guide and PowerPoint briefings.

Source: GEEP-NY, Undated.

Other Programs

- **Center for a New American Dream.** The center is a nonprofit organization dedicated to promoting responsible consumption. The organization has developed a clearinghouse of information resources, including case studies and model policies, for EPP procurement at the institutional level. The center has also developed the Responsible Purchasing Network, a member-based network of procurement stakeholders, to promote EPP purchasing. The network provides several types of resources, including purchasing guides, discussion forums, and publications.

  Web sites: *http://www.responsiblepurchasing.org/*

- **Environmentally Preferable Products Procurement Listserv (EPPnet).** The EPPnet listserv was established by the Northeast Recycling Council, a 10-state collaborative for recycling research and development. The listserv links federal, state, and local environmental officials with procurement specialists to provide subscribers access to information on product specifications, vendors, pricing information, and procurement strategies for EPPs.

  Web site: *http://www.nerc.org/eppnet/index.html*

- **National Association of Counties (NACo).** NACo administers a number of energy-related initiatives through its Green Government Initiative, including a purchasing and procurement program. The purchasing and procurement program offers educational resources, information on upcoming events and training opportunities, and information about related programs, such as the U.S. Communities Government Purchasing Alliance.

  Web site: *http://www.naco.org/GreenTemplate.cfm?Section=Purchasing_and_Recycling&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=88&ContentID=24094*

NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING

The National Institute of Governmental Purchasing, Inc. provides educational and training resources for purchasers from public entities across the nation. As part of its resource dissemination, the institute maintains a list of many of the nation's purchasing cooperatives (*http://www.nigp.org/eweb/Dynamicpage.aspx?webkey=2c737a3d-bf13-432f-a48a-1dbe6ecf7fbe*).

Source: NIGP, 2007.

- **National Association of State Procurement Officials (NASPO).** NASPO is a nonprofit organization that works with purchasing officials in state government by encouraging information exchange to achieve increased efficiency and effectiveness in national purchasing activities. The organization has collected many resources that local governments can use to implement energy-efficient product procurement programs, including information materials and sample projects.

  Web site: *http://www.naspo.org/*

- **Regional purchasing cooperatives.** Regional cooperative purchasing alliances can provide local governments with information resources and opportunities to aggregate purchases. These cooperatives, which can be on a regional or interstate level, often produce qualified product lists that include energy-efficient products. The Kansas City Regional Purchasing Cooperative (KCRPC), for example, is a joint cooperative between the Mid-America Regional Council, the Mid-American Council of Public Purchasing, and local governments in the Kansas City, Missouri, region that aggregates purchases through shared contracts to obtain reduced prices (KCRPC, 2007). The Western States Contracting Alliance (WSCA), an interstate cooperative, allows governments from participating states to take advantage of reduced prices through cooperative purchasing (WSCA, 2010).

9. CASE STUDIES

The following case studies describe two comprehensive programs for implementing energy-efficient product procurement activities. Each case study describes how the program was initiated, key program activities and features, and program benefits.

King County, Washington—Environmental Purchasing Program

Since its inception in 1989 as an initiative to promote use of recycled materials, the King County, Washington Environmental Purchasing Program has developed into a comprehensive purchasing program that incorporates a broad range of energy and environmental goals.

Profile: King County, Washington

Area: 2,134 square miles

Population: 1.8 million

Structure: The county, which includes 39 incorporated cities and several unincorporated areas, is governed by a publicly elected county executive and a council consisting of publicly elected representatives from nine districts.

Program Scope: The Environmental Purchasing Program is administered by the Finance and Business Operations Division's Procurement and Contract Services Section. In 2006, King County spent $36 million to provide approximately 17,000 employees (working in 16 primary agencies and departments) with EPPs. Of this amount, $2.4 million was spent on electronics, including desktop computers, laptops, and monitors. Most of the remaining funds were used to purchase and fuel fuel-efficient and alternative-fuel vehicles.

Program Creation: The Environmental Purchasing Policy was issued in 1995. This policy expanded the 1989 Recycled Product Procurement Policy. A 1999 administrative policy requires that office equipment meet ENERGY STAR qualification.

Program Results: In 2006, purchasing EPPs, including energy-efficient products, saved King County $640,000 in procurement costs.

Source: King County, 2009; King County, 2006; King County, 2008a..

PROGRAM INITIATION

In 1989, the Metropolitan King County Council established the Recycled Product Procurement Policy. This policy included rules and regulations for county agency procurement of paper products and lubricating and fuel oils. The King County Environmental Purchasing Policy, adopted in 1995, expanded the existing procurement policy and included explicit direction to the county's purchasing and solid waste divisions to provide government entities with technical assistance in purchasing EPPs whenever cost-effective and practicable to do so (King County, 1995). In 1999, the program issued a bulletin requiring that bid documents for computer systems, monitors, printers, copiers, fax machines, and scanners include language specifying ENERGY STAR qualification. The program has found that the low-cost premium and high market availability of energy-efficient products has typically enabled purchasers to specify products that meet energy efficiency criteria and the Environmental Purchasing Policy's cost-effectiveness and practicability criteria (King County, 1999; King County, 2007; King County, 2008b).

PROGRAM FEATURES

The King County Environmental Purchasing Program is administered by the Procurement and Contract Services Section of the Finance and Business Operations Division, which is responsible for communicating policy requirements and information about price, performance, and benefits of products to purchasers. Features of the program include:

- **Environmental purchasing program manager.** The county hired a program manager in 1990 to oversee implementation. Serving as a program "champion," the program manager developed the framework of the program and coordinated staff training sessions.

- **Model EPP policy.** The program includes a model EPP purchasing policy for use by its constituent cities and businesses and for other counties. The model policy highlights the importance of clearly delineating the respective implementation and operation roles of the lead agencies and other agencies involved in the program.

- **Strategies for maintaining agency support.** King County conducts educational seminars to train its purchasers to implement the Environmental Purchasing Policy. In addition, the county developed and distributes the Environmental Purchasing Bulletin to government agencies (King County, 2006).

- **Integrated energy and environmental goals.** Like many local government EPP purchasing programs, King County's Environmental Purchasing Program includes energy-efficient product procurement. The program is unique in that it also includes opportunities for purchasing a broad range of other EPPs, including biodiesel and hybrid vehicles. To help meet its energy and environmental goals, the program has coordinated with several other county programs, such as the Energy/Resource Conservation Program in the Department of Natural Resources and Parks, to obtain technical assistance and disseminate information to the public (King County, 2006).

- **Public involvement.** King County uses its Environmental Purchasing Program to promote the benefits of EPPs throughout the community. The program has participated in training conferences and trade shows that involve sharing experiences with state and local government personnel. The program has also conducted training sessions for local businesses and workshops at local schools (King County, 2006).

- **Annual reporting.** The Procurement and Contract Services Section is responsible for developing an annual report describing program accomplishments and identifying future opportunities for improvement (King County, 2008a).

PROGRAM RESULTS

In 2006, purchasing EPPs saved the county approximately $640,000 in procurement costs. Since its inception, the Environmental Purchasing Program has earned recognition in the form of awards from EPA and NACo. In addition, program staff have been involved in developing a nonprofit national organization called the Responsible Purchasing Network, a collaborative that seeks to promote government and business adoption of energy-efficient and EPP purchasing policies (King County, 2007).

In 2007, the county adopted an energy plan that, among other things, encourages purchasing ENERGY STAR qualified products. The plan recommends that the county Department of Finance work with the Energy Task Force to develop a county ENERGY STAR purchasing policy for office equipment (King County, 2008b).

Web site: *http://www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing.aspx*

San Francisco, California—Green Purchasing Program

The San Francisco Green Purchasing Program helps city agencies implement the city's procurement policies. The program has extended its scope to include outreach to assist local businesses and residents.

Profile: San Francisco, California

Area: 47 square miles

Population: 750,000

Structure: The city is governed by a publicly elected mayor and a Board of Supervisors comprised of representatives from 11 districts.

Program Scope: The Green Purchasing Program is administered by SF Environment, the city's environment department. The program provides guidance on purchasing EPPs to the four divisions that purchase products for the city's 30,000 employees across 90 bureaus. The city spends more than $2 million on energy-using products annually (not including refrigerators or computers).

Program Creation: A city ordinance created an Environmentally Preferable Purchasing Program pilot in 1999. The establishment of a Municipal Environmental Code in 2003, which consolidated multiple purchasing-related environmental ordinances, led to scaling up the pilot project into the Green Purchasing Program.

Program Results: Since San Francisco began its green purchasing program, it has introduced more than 1,000 zero- or low-emission vehicles to the city fleet, and saved 6,800 trees and more than 500,000 gallons of water each year by purchasing recycled content paper. The city has also cut municipal pesticide use by nearly two-thirds and dramatically increased the purchase of low-mercury, long-life fluorescent lamps.

Source: San Francisco, 2007; CEE, Undated; SF Environment, 2008a.

PROGRAM INITIATION

The Green Purchasing Program developed out of San Francisco's Environmentally Preferable Purchasing Pilot Program (EP3) and the Precautionary Purchasing Ordinance. In 1999, the city Board of Supervisors passed an ordinance that called for the creation of an EP3 pilot program. In 2003, the Board of Supervisors adopted a comprehensive Municipal Environmental Code. The second chapter of the code, the Precautionary Purchasing Ordinance (added in 2005), succeeds the ordinance that created the pilot program and is based on its findings. The ordinance requires agencies to purchase only products from the city's list of approved EPPs. Another chapter of the Environmental Code addresses resource efficiency and requires agencies to purchase LED exit signs, electronic ballasts and T8 efficient lighting systems, photocells and timers for exterior lights. The comprehensive Green Purchasing Program was initiated to meet the requirements of the ordinances (SF Environment, 2007a).

PROGRAM FEATURES

The Green Purchasing Program is administered by SF Environment, the agency responsible for coordinating implementation of the city's environmental programs. The Green Purchasing Program includes the following features:

- **Pilot program.** The EP3 pilot program enabled SF Environment to identify its best opportunities for achieving the greatest potential benefits from large-scale program implementation. The pilot also enabled the agency to identify potential implementation challenges and develop key recommendations for addressing those concerns.

- **Compilation of information on product impacts, performance, and costs.** Through the pilot program, SF Environment collected information on the impact, performance, and cost of a range of EPPs. The information is available to agency purchasers and private residents on the SF Environment Web site.

- **Product testing.** Throughout the three-year pilot program, city staff tested the products they purchased. In 83 percent of those tests, the environmentally preferable product met staff performance requirements.

- **List of approved products.** Unless exempted by a waiver, purchasers are required to specify products from a predetermined list of approved products. This feature ensures consistent program performance across the agencies and reduces the time that purchasers would otherwise spend researching product information.

- **Evaluation of listed products.** SF Environment has developed a score sheet to assist purchasers in evaluating the relative energy and environmental attributes of different products on the approved product list.

- **Stakeholder involvement.** The EP3 pilot program included a working group that consisted of city employees from 10 agencies, and a technical advisory group that consisted of representatives from EPA Region 9 and the states of Massachusetts and Minnesota. The groups provided input during the product list development phase and provided a link to agency purchasers.

- **Public involvement.** SF Environment encouraged community members to participate in its priority product list development process. In addition, SF Environment developed a subsidiary Green Purchasing Program exclusively for residents. The program provides residents with guidance on selecting EPPs in their daily purchases (SF Environment, 2007a).

PROGRAM RESULTS

The July 2007 Precautionary Purchasing Ordinance progress report identifies numerous accomplishments over two years. The report highlights the increases in purchases of energy-efficient products, including energy-efficient T8 lamps with electronic ballasts for city facility lighting systems. The city has eliminated all purchases of T12 lamps (which are less efficient than T8s), and in FY 2005–2006, T8 lamps comprised 38 percent of all lamp sales (SF Environment, 2006). Such replacements can lead to significant savings: replacing a single 43-watt T12 lamp with a 25-watt T8 lamp can produce annual energy savings of more than $4 (Focus on Energy, 2006).

Web site: *http://www.sfenvironment.org/our_programs/topics.html?ssi=9&ti=22#Public%20Awareness*

10. ADDITIONAL EXAMPLES AND INFORMATION RESOURCES

Title/Description	Web Site
Examples of Local Energy-Efficient Product Procurement Activities	
Akron, New York – Akron has established an ENERGY STAR Appliance Advantage Program to provide incentives to municipal electric utility customers who purchase ENERGY STAR qualified appliances.	*http://www.erie.gov/akron/news_010107.asp*
Alameda County, California – The county has developed a model procurement policy and accompanying implementation guidance document to assist local governments within its jurisdiction.	*http://www.ciwmb.ca.gov/EPP/LawPolicy/AlaPolImp.doc*
Austin, Texas – Austin Energy, the city-owned and operated electric utility, offers its customers a $2 coupon for purchase of up to two individually packaged ENERGY STAR qualified CFLs (or $4 for purchase of a package of two or more ENERGY STAR qualified CFLs). The utility also offers a $10 coupon for purchases of ENERGY STAR qualified light fixtures.	*http://www.austinenergy.com/Energy%20Efficiency/Tools%20and%20Tips/Residential/Energy%20Efficient%20Appliances/products.htm*
Banning, California – Banning provides rebates to municipal electric utility customers who purchase certain ENERGY STAR qualified products.	*http://www.ci.banning.ca.us/DocumentView.aspx?DID=197*
Berkeley, California – Berkeley has established an EPP purchasing policy that includes language requiring city agencies to purchase energy-efficient equipment.	*http://www.responsiblepurchasing.org/UserFiles/File/Ofice%20Electronics/Policies/City_of_Berkeley_CA_Green_Purchasing_Policy_2004.pdf*
Chatham County, North Carolina – The County Board of Commissioners passed a resolution creating the Environmental Leadership Policy that establishes requirements for county government departments to meet EPP purchasing standards.	*http://www.co.chatham.nc.us/interweb/wwwroot/CountyPolicies/Environmental%20Leadership%20Policy.pdf*
King County, Washington – The county has developed the comprehensive Environmental Purchasing Program. The program's Web site contains model policies and contract language to help local governments develop their own policies.	*http://www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing.aspx*
Multnomah County, Oregon – Energy-efficient product procurement is a cornerstone of the county's Energy Conservation Program. This Web site provides a case study of the program.	*http://web.multco.us/sustainability/sustainable-purchasing*
Nevada County, California – The county's green procurement policy allows purchasers to obtain EPPs that are not "unreasonably expensive."	*http://www.ciwmb.ca.gov/BuyRecycled/Policies/GPpolicy.pdf*
New York, New York – The New York City WasteLe$$ program provides assistance for municipal agencies in complying with the energy-efficient product purchasing requirements laid out in NYC Local Law 119 of 2005.	*http://www.nyc.gov/html/nycwasteless/html/wasteless/atwork_tips_agency.shtml*
Riverside, California – The Riverside municipal electric utility offers customers rebates for purchasing ENERGY STAR qualified energy-using products.	*http://www.riversideca.gov/utilities/busi-energystar.asp*
Roseau, Minnesota – Roseau offers rebates to local residents who purchase qualifying energy-efficient products.	*http://city.roseau.mn.us/index.asp?Type=B_BASIC&SEC={5D547B62-4C01-48E9-9838-172AA3AC595D}*
San Diego, California – San Diego has established an energy-efficient product procurement policy that requires all products purchased by government agencies to meet ENERGY STAR qualification or achieve energy efficiency performance in the top 25% of their categories.	*http://docs.sandiego.gov/councilpolicies/cpd_900-18.pdf*

10 ADDITIONAL EXAMPLES AND INFORMATION RESOURCES *(cont.)*

Title/Description	Web Site
Santa Monica, California – Santa Monica has established an environmentally preferable purchasing program that includes specifications for energy-efficient office equipment.	*http://www.smgov.net/epd/printed_materials/pdf/Epp_0203_Annual%20Update.pdf*
Scottsdale, Arizona – Scottsdale offers free public seminars on energy-efficient strategies, including energy-efficient product procurement.	*http://www.scottsdaleaz.gov/greenbuilding.asp#Events*
Seattle, Washington – The Seattle Sustainable Purchasing Policy was developed to consolidate the requirements of multiple city council codes and resolutions requiring local government agencies to purchase EPPs.	*http://www.seattle.gov/environment/documents/sus-purchasing-policy11-06-03.doc*
Washington, DC – The Washington, DC, city council passed legislation in 2004 requiring government agencies to specify ENERGY STAR qualification when purchasing energy-using products.	*http://www.dccouncil.washington.dc.us/images/00001/20041214143141.pdf*
Examples of Local Electronics Recycling Activities	
King County, Washington – The county has developed a model contract that enables county departments to obtain electronics recycling services.	*http://your.kingcounty.gov/solidwaste/takeitback/electronics/documents.asp*
New York, New York – The New York City WasteLe$$ program has developed an electronics recycling initiative. City agencies, schools, businesses, and institutions are required to participate.	*http://www.nyc.gov/html/nycwasteless/html/recycling/electronicsrecycling.shtml*
Tacoma, Washington – Tacoma and Pierce County coordinate with local recycling companies, vendors, and consumers to make electronics recycling easier for city and county residents.	*http://www.cityoftacoma.org/Page.aspx?cid=1366*
Information Resources for Energy-Efficient Product Procurement	
Helping Agencies Buy Energy-Efficient Products – DOE has developed this paper to provide information to federal purchasers on the benefits of purchasing energy-efficient products and how to obtain assistance in developing energy-efficient product procurement programs.	*http://www1.eere.energy.gov/femp/pdfs/eeproducts_fs.pdf*
Chapter 5: Local Action Plan Best Bets: Municipal Purchasing Programs – The Climate Protection Manual for Cities provides information on establishing local purchasing programs and developing energy efficiency standards for office equipment. This chapter includes several case studies.	*http://www.climatemanual.org/Cities/downloads/CPM_Chapter5_LocalActionPlan_BestBets_Purchasing.pdf*
City of Oakland Purchase/Lease: An Analysis of Procurement Options – Oakland, California, commissioned this report on funding options for procurement activities. The report addresses energy efficiency as well as lease-purchase options and bond financing.	*http://www.oaklandnet.com/budgetoffice/OaklandPurchaseLease-v3.pdf*
Energy-Efficient Procurement Resources – Washington State University has compiled this collection of energy-efficient procurement information resources.	*http://www.energyideas.org/documents/factsheets/Proc_Resources.pdf*
Energy-Efficient Traffic Signals – This Consortium for Energy Efficiency fact sheet provides information on the benefits of converting traffic signals to energy-efficient LEDs.	*http://www.cee1.org/resrc/facts/led-fx.pdf*
FEMP Purchasing Energy Efficiency Requirements (Energy-Efficient Product Purchasing Specifications) – FEMP issues energy efficiency specifications for more than 50 types of products commonly purchased by federal agencies.	*http://www1.eere.energy.gov/femp/procurement/index.html*

10 ADDITIONAL EXAMPLES AND INFORMATION RESOURCES *(cont.)*

Title/Description	Web Site
Flex Your Power Best Practices – Flex Your Power, a California Public Utilities Commission initiative, has developed multiple local government guidance documents on various topics. Many of these guides address issues of relevance to energy-efficient product procurement.	*http://www.fypower.org/bpg/index.html?b=institutional*
Guide to Energy-Efficient Heating and Cooling – This ENERGY STAR resource provides comprehensive checklists for improving HVAC system energy efficiency.	*http://www.energystar.gov/ia/partners/publications/pubdocs/HeatingCoolingGuide%20FINAL_9-4-09.pdf*
Institutional Purchasing: Save Money, Time and the Environment – This ENERGY STAR document provides an overview of the benefits of purchasing energy-efficient products at the institutional level.	*http://www.energystar.gov/ia/partners/reps/pt_reps_purch_procu/files/general_purchasing_new_10-4.pdf*
Online Guide to Energy-Efficient Office Equipment – This American Council for an Energy-Efficient Economy guide provides an overview of the costs and benefits of purchasing different energy-efficient office products.	*http://www.aceee.org/topics/office-equipment*
Potential Energy, Cost, and CO_2 Savings from Energy-Efficient Government Purchasing – This LBNL report provides information on the benefits of energy-efficient product procurement at the government level.	*http://www1.eere.energy.gov/femp/pdfs/government_purchasing.pdf*
Procuring Energy-Efficient Products – This document was produced by the Consortium for Energy Efficiency as a guidebook for state and local government purchasing agencies.	*http://www.cee1.org/gov/purch/gb1-rev2.pdf*
State and Local Government Purchasing Initiative – Though no longer active, this Consortium for Energy Efficiency project provides information on state and local government purchasing, including guidebooks and case studies.	*http://www.cee1.org/gov/purch/purch-main.php3*
Strength in Numbers: An Introduction to Cooperative Procurements – This NASPO resource provides an overview of the benefits of and strategies for entering into cooperative procurement agreements.	*http://www.naspo.org/documents/CooperativePurchasingBrief.pdf*
Whole Building Design Guide – The guide is a comprehensive resource for designing energy-efficient facilities. The guide includes a number of resources to assist in selecting energy-efficient building components.	*http://www.wbdg.org/design/minimize_consumption.php*
Information Resources for End-of-Life Management of Electronic Products	
Electronics Waste Management in the United States – This EPA report presents a national analysis of current trends in disposal and management of electronic products.	*http://www.epa.gov/epaoswer/hazwaste/recycle/ecycling/manage.htm*
End-of-Life Management – The Federal Electronics Challenge has developed a Web site to provide federal facilities with information on purchasing green electronic products. The program maintains a collection of resources on end-of-life management.	*http://www.federalelectronicschallenge.net/resources/eolmngt.htm*
Guidelines for the Procurement, Use, and End-of-Life Management of Electronic Equipment – This report was developed for the California Integrated Waste Management Board to provide state agencies with tools to implement cost-saving procurement practices that have minimal energy and environmental impacts.	*http://www.ciwmb.ca.gov/Electronics/Procurement/PUEOL/FinalGuide.pdf*
Information Resources for Green or Environmentally Preferable Product Procurement	
Environmentally Preferable Purchasing – This New American Dream Web site serves as a clearinghouse of resources on EPP. It includes case studies and model policies as well as guidance on developing comprehensive purchasing programs.	*http://www.responsiblepurchasing.org/*

10 ADDITIONAL EXAMPLES AND INFORMATION RESOURCES *(cont.)*

Title/Description	Web Site
Environmentally Preferable Purchasing Database – This EPA database provides information on EPPs and services sorted by category.	*http://yosemite1.epa.gov/oppt/eppstand2.nsf*
Final Guidance on Environmentally Preferable Purchasing – This EPA guidance was developed in response to federal Executive Order 13101, which requires federal agencies to implement EPP purchasing policies.	*http://www.epa.gov/epp/pubs/guidance/finalguidance.htm#GuidingPrinciple1*
Green Procurement Initiative – The California Energy Commission has compiled a list of state, county, and local purchasing programs.	*http://www.cec.org/files/PDF/ECONOMY/Green-Procurement_Initiatives_en.pdf*
Green Purchasing: A Guide for Local Governments and Communities – This document, developed by the New Jersey Department of Environmental Protection, provides guidance to New Jersey communities in establishing and implementing green purchasing activities.	*http://www.state.nj.us/dep/opsc/docs/green_purchasing_guide_local_governments.pdf*
Green Purchasing in County Offices Factsheet – NACo has developed a starter kit for county purchasing agents and policy makers to provide an overview of opportunities to implement EPP purchasing policies.	*http://www.naco.org/programs/csd/Green%20Government%20Documents/Green%20Purchasing%20in%20County%20Offices%20(Factsheet).pdf*
Hennepin County, Minnesota Lead by Example Initiative Guidelines – The Board of Commissioners in Hennepin County has authorized creation of the Lead by Example Incentive Fund that will award a combined $100,000 to county departments that invest in EPPs. The board has developed guidelines to assist department staff in meeting the program's requirements.	*http://www.rethinkrecycling.com/government/eppg*
Implementation Guidelines for Model Policy – These guidelines for implementing a model procurement policy were developed by Alameda County. The county's model policy has been adopted by several California local governments.	*http://www.ciwmb.ca.gov/epp/LawPolicy/AlaPolImp.doc*
Introduction to Cooperative Procurement – NASPO has developed a primer on the benefits and strategies of cooperative procurement.	*http://www.naspo.org/documents/CooperativePurchasingBrief.pdf*
NASPO – The organization works with state procurement officials to facilitate information exchange and aid purchasers in obtaining cost-effective products through cooperative procurement.	*http://www.naspo.org/*
National Institute of Governmental Purchasing (NIGP) – This nonprofit organization provides assistance and information to public purchasers on a range of issues.	*http://www.nigp.org/eweb/StartPage.aspx?Site=NIGP&webcode=abt_mvv*
Responsible Purchasing Network – The network was initiated by purchasing stakeholders and has compiled multiple responsible purchasing guides on fleets, electronics, office equipment, and paints.	*http://www.responsiblepurchasing.org/*
Model Policies for Energy-Efficient and EPP Procurement	
Environmental Purchasing Policies 101 – The Center for a New American Dream developed this guidance document to provide purchasers with a collection of best practices relating to environmentally preferable purchasing. The document includes a sample EPP purchasing policy.	*http://www.cec.org/files/pdf//NAGPI%20Policy%20Paper2e.pdf*
Model Environmentally Preferable Products Policy – The King County Environmental Purchasing Program has established this model policy for cities and other organizations.	*http://www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing/~/media/operations/procurement/documents/EP_Policy_Model.ashx*

Title/Description	Web Site
Center for a New American Dream Collection of Green Purchasing Polices – The center has collected a list of annotated examples of green purchasing policies.	*http://www.responsiblepurchasing.org/purchasing_guides/all/policies/*
Tools and Certification for Energy-Efficient and EPP Procurement	
ENERGY STAR Purchasing and Procurement – ENERGY STAR provides certification for energy-efficient products. In general, ENERGY STAR qualified products use 10–75% less energy than conventional products of the same utility.	*http://www.energystar.gov/index.cfm?c = bulk_purchasing.bus_purchasing*
ENERGY STAR Purchasing and Procurement Briefings – ENERGY STAR provides monthly Webcasts that identify available resources, including the product calculators.	*http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing_key_benefits#online*
EPEAT – EPEAT is a system to help purchasers compare and select computer equipment based on a product's environmental attributes. EPEAT certification is intended to meet ENERGY STAR qualification standards for energy efficiency.	*http://www.epeat.net/*
Green Purchasing Training – The Office of the Federal Environmental Executive (OFEE) provides opportunities for free online training and frequent classroom training to procurement officials interested in green purchasing.	Please contact OFEE at *info@ofee.gov*.
Green Seal – Green Seal is a nonprofit organization that establishes standards for EPPs and administers its own certification program. The organization produces Choose Green Reports that provide information on a range of EPPs.	*http://www.greenseal.org/*

11. REFERENCES

AIRE. UNDATED. *Arlington Initiative to Reduce Emissions*. Available: *http://www.arlingtonva.us/portals/topics/Climate.aspx*. Accessed 5/28/2007.

Akron. 2007. *Village of Akron to Renew the ENERGY STAR Appliance Advantage Program*. Available: *http://www.erie.gov/akron/news_010107.asp*. Accessed 5/25/2007.

Alameda County. 2003. *Environmentally Preferable Purchasing Model Policy*. Available: *http://www.ciwmb.ca.gov/EPP/LawPolicy/AlaPolicy.doc*. Accessed 5/23/2007.

Albuquerque. 2006. *Resolution R-05-329: Adopting Policies to Establish and Implement a City Renewable Energy Initiative*. Available: *http://www.cabq.gov/energy/documents/Resolution329.doc*. Accessed 1/21/2011.

Austin Energy. 2007. *ENERGY STAR Products*. Available: *http://www.austinenergy.com/Energy%20Efficiency/Tools%20and%20Tips/Residential/Energy%20Efficient%20Appliances/products.htm*. Accessed 9/11/2007.

Banning. 2006. ENERGY STAR Products Rebate. Available: *http://www.ci.banning.ca.us/DocumentView.aspx?DID=197*. Accessed 9/11/2007.

Carnegie Mellon. 2005. Center for Building Performance. As cited in Greening America's Schools: Costs and Benefits. G. Kats, Capital E. Available: *http://www.leed.us/ShowFile.aspx?DocumentID=2908*. Accessed 4/17/2007.

Case, S. 2004. Environmental Purchasing Policies 101: An Overview of Current Environmentally Preferable Purchasing Policies. Available: *http://www.cec.org/files/pdf//NAGPI%20Policy%20Paper2e.pdf*. Accessed 5/23/2007.

CEE. 2002. LED Traffic Signals Provide Dramatic Energy Savings. Available: *http://www.cee1.org/gov/led/led-cost.pdf*. Accessed 10/8/2007.

CEE. UNDATED. CEE Case Study: City of San Francisco. Available: *http://www.cee1.org/gov/purch/SF-case.pdf*. Accessed 9/12/2007.

CIWMB. 2008. *Overall Framework for an Extended Producer Responsibility System in California*. Attachment 1, Board Meeting Agenda. January 23, 2008. Available: *http://www.calrecycle.ca.gov/EPR/Framework/Framework.pdf*. Accessed 1/24/2011.

Colorado Energy. 2007. *Success Story: Boulder, Colorado*. Available: *http://www.coloradoenergy.org/activities/success/boulder.htm*. Accessed 9/11/2007.

EIA. 2003. *Commercial Buildings Energy Consumption Survey*. Available: *http://www.eia.doe.gov/emeu/cbecs/contents.html*. Accessed 1/21/2011.

EIA. 2008. 2003 *Commercial Buildings Energy Consumption Survey: Major Fuel Consumption (Btu) by End Use for Non-Mall Buildings, 2003*. Released September 2008. Available: *http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set19/2003pdf/e01.pdf*. Accessed 2/3/2011.

EIA. 2009. *Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State*. November 13, 2009. Available: *http://www.eia.doe.gov/cneaf/electricity/epm/table5_6_b.html*. Accessed 11/23/2009.

FEMP. 2007. *Energy-Efficient Products*. Available: *http://www1.eere.energy.gov/femp/technologies/eep_purchasingspecs.html*. Accessed 9/12/2007.

Flex Your Power. 2009. *Best Practice Guide: Local Governments*. Available: *http://www.fypower.org/bpg/index.html?b=institutional*. Accessed 12/1/2009.

Focus on Energy. 2006. *High Performance T8 Systems: Frequently Asked Questions*. Available: *http://www.focusonenergy.com/files/Document_Management_System/Business_Programs/highperformancereducedwattaget8systems_factsheet.pdf*. Accessed 9/12/2007.

Gartner. 2002. *Cool Roof Energy Savings Evaluation for City of Tucson Thomas O*. Price Service Center Administration Building One. Available: *http://cms3.tucsonaz.gov/files/energy/CoolCommPh2-Dr.GsFinalReport-COVERPG.pdf* Accessed 1/31/2008.

GEEP-NY. UNDATED. *New York Energy $mart Procurement Fact Sheet*. Available: *http://www.nyserda.org/programs/pdfs/geepnyfactsheet.pdf*. Accessed 1/21/2011.

Harris, J., M. Brown, J. Deakin, S. Jurovics, A. Khan, E. Wisniewski, J. Mapp, B. Smith, M. Podeszwa, A. Thomas. 2004. *Energy-Efficient Purchasing by State and Local Government Triggering a Landslide Down the Slippery Slope to Market Transformation*. ACEEE Summer Study. Available: *http://www.pepsonline.org/publications/Energy%20Efficient%20Purchasing%20By%20State%20and%20Local%20Government.pdf*. Accessed 12/1/2009.

Hatcher, K. and T. Dietsche. 2001. *Manage Energy Uncertainty: Use Quick Financing for Energy Efficiency Projects*. ICMA. Available: *http://www.coloradoenergy.org/activities/success/download.aspx?CaseStudyID=22*. Accessed 3/7/2007.

ICECF. 2007. *Illinois Clean Energy Community Foundation Lighting Upgrades*. Available: *http://www.illinoiscleanenergy.org/lighting/*.Accessed 12/7/2007.

ICLEI. 2007. *Profiting from Energy Efficiency: 7.0 Best Municipal Practices for Energy Efficiency*. Available: *http://www.iclei.org/index.php?id=1677*. Accessed 4/12/2007.

Johnson Controls. 2007. *Case Study: City of Compton*. Available: *http://www.johnsoncontrols.com/publish/etc/medialib/jci/be/case_studies.Par.61085.File.tmp/City%20of%20Compton%20CS%20FINAL.pdf*. Accessed 9/11/2007.

Kansas City. 1998. *Green Purchasing Ordinance*. Available: *http://cityclerk.kcmo.org/liveweb/Documents/Document.aspx?q=WuSWwWO3CXH0etE3Fn3AbpRj%2flvVUt%2bRIeZCSyVoiGJJrBSjERXbFIJ8nopHug2%2b*. Accessed 12/1/2009.

KCRPC. 2007. *Kansas City Regional Purchasing Cooperative*. Available: *http://www.marc.org/kcrpc/*. Accessed 5/28/2007.

King County. 1995. *King County Environmental Purchasing Policy*. Available: *http://www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing/Policies.aspx*. Accessed 12/1/2009.

King County. 1999. *Environmental Purchasing* (EP) Bulletin #43: ENERGY STAR requirements. Available: *http://www.p2pays.org/ref/14/13785.htm*. Accessed 12/1/2009.

King County. 2006. *King County Environmental Purchasing Annual Report, 2006*. Available: *http://your.kingcounty.gov/procure/green/2006annrep.pdf* Accessed 9/12/2007.

King County. 2007. *Environmental Purchasing Program*. Available: *http://www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing.aspx*. Accessed 12/1/2009.

King County. 2008A. *Revision 4 of King County Energy Plan*. Available: *http://your.kingcounty.gov/dnrp/measures/documents/pdf/KC-Energy-Plan-2008.pdf*. Accessed 12/1/2009.

King County. 2008B. *Program Information*. Personal communication, February 14, 2008.

King County. 2009. *About King County*. Available: *http://www.kingcounty.gov/About.aspx*. Accessed 12/1/2009.

Kitsap County, 1999. *Ordinance No. 233-1999: Prevention of Waste in County Government*. Available: *http://www.kitsapgov.com/sw/ordinance233.htm*. Accessed 5/23/2007.

Lansing. 2007. *Executive Order 2007-01*. Available: *http://www.dsireusa.org/documents/Incentives/MI11R.htm*. Accessed 1/30/2008.

LBNL. 2002. *Potential Energy, Cost, and CO_2 Saving from Energy-Efficient Government Purchasing*. Available: *http://www1.eere.energy.gov/femp/pdfs/government_purchasing.pdf*. Accessed 10/8/2007.

LBNL. 2003. *ENERGY STAR Product Specification Development Framework: Using Data and Analysis to Make Program Decisions*. Available: *http://enduse.lbl.gov/info/LBNL-53326.pdf*. Accessed 9/11/2007.

Lodi. 2000. *Resolution 99-99*. Available: *http://publicdocs.lodi.gov/Docs/RESOLUTIONS/1997-2003/00001024.pdf*. Accessed 9/11/2007.

Medford. 2005. *Energy and Resource Efficiency Policy*. Available: *http://www.medford.org/Pages/Medford-MA_Energy/Energy_Efficiency_Policy.pdf*. Accessed 9/6/2007.

Mississippi. 2009. *Energy Efficient Lease Program for Public Facilities and Private "Nonprofit" Hospitals*. Available: *http://www.mississippi.org/index.php?id=38*. Accessed 12/1/2009.

Multnomah County, 2010. *Multnomah County, Oregon. Sustainable Purchasing*. Available: *http://web.multco.us/sustainability/sustainable-purchasing*. Accessed 2/15/2011.

NACo. 2008. *Green Purchasing in County Offices*. Available: *http://www.naco.org/programs/csd/Green%20Government%20Documents/Green%20Purchasing%20in%20County%20Offices%20(Factsheet).pdf*. Accessed 2/17/2011.

NEEP. 2006. *NEEP Notes: Best Practices in Energy Efficiency in the Northeast*. Northeast Energy Efficiency Partnerships. Third Quarter 2006.

Nevada County. 2002. *Nevada County Green Procurement and Sustainable Practices Policy*. Available: *http://www.ciwmb.ca.gov/BuyRecycled/Policies/GPpolicy.pdf*. Accessed 5/23/2007.

New York City Department of Sanitation. 2007. *Green or Environmentally Preferable Purchasing*. Available: *http://www.nyc.gov/html/nycwasteless/html/wasteless/atwork_greenpurchasing_agencies.shtml#local118-121*. Accessed 5/29/2007.

NIGP. 2007. *Purchasing Cooperatives*. Available: *http://www.nigp.org/eweb/Dynamicpage.aspx?webkey=2c737a3d-bf13-432f-a48a-1dbe6ecf7fbe*. Accessed 12/1/2009.

Oakland. 2007. *Environmentally Preferable Purchasing Policy*. Available: *http://clerkwebsvr1.oaklandnet.com/attachments/17021.pdf*. Accessed 9/10/2007.

Philadelphia. 2007. *Local Climate Action Plan: Buildings*. Available: *http://www.phila.gov/green/PDFs/Attachment1_Philadelphia_Local_Action_Plan_Climate_Change.pdf*. Accessed 2/17/2011.

Phoenix. 2007. *Recycling and Pollution Prevention*. Available: *http://www.phoenix.gov/greenphoenix/sustainability/summary/recycle.html*. Accessed 12/1/2009.

Raleigh. 2007. *Raleigh and Cree Team Up for LED City Initiative*. Available: *http://www.solidstatelighting-design.com/documents/articles/gsedoc/7917.html*. Accessed 12/1/2009.

Riverside. 2007. *ENERGY STAR Residential Product Rebate Program*. Available: *http://www.riversideca.gov/utilities/resi-energystar.asp*. Accessed 1/21/2011.

San Diego. 2001. *Purchase of Energy Efficient Products*. Available: *http://docs.sandiego.gov/councilpolicies/cpd_900-18.pdf*. Accessed 9/6/2007.

San Diego. UNDATED. *Energy Retrofits*. Available: *http://www.sandiego.gov/environmental-services/energy/programsprojects/saving/retrofits.shtml*. Accessed 9/6/2007.

San Francisco. 2003. *Precautionary Principle Ordinance*. Available: *http://www.sfenvironment.org/our_policies/overview.html?ssi=14*. Accessed 5/30/2007.

San Francisco. 2007. *Organizational Chart*. Available: *http://www6.sfgov.org/index.aspx?page=43*. Accessed 2/17/2011.

Santa Clarita. 2005. *Resolution 05-103*. Available: *http://www.santa-clarita.com/cityhall/admin/purchasing/resolutions/05-103%20%20EPP.htm*. Accessed 9/10/2007.

Santa Rosa. 2003. *Energy Conservation Program in City Buildings*. Available: *http://ci.santa-rosa.ca.us/ENVIRONMENTAL_STEWARDSHIP/ENERGY/CONSERVATION/LED/Pages/default.aspx*. Accessed 12/1/2009

SCCED. 2000. *Building Sustainable Cities Conference*. Southern California Council on Environment and Development. Available: *http://www.scced.org/scced/hotissues/SusCities.html*. Accessed 12/1/2009..

Scottsdale. 2007. *Seminar, Building Science: A System Approach to Energy Efficiency*. February 1, 2007. Available: *http://www.ucansustain.com/dsp_articles.cfm?articleno=s020905*. Accessed 12/1/2009.

Seattle. 2003. *Sustainable Purchasing Policy*. Available: *http://www.seattle.gov/environment/documents/sus-purchasing-policy11-06-03.doc*. Accessed 5/23/2007.

SECO. 2007. *Energy Education Outreach Projects: Energy Efficiency Partnership*. Available: *http://www.seco.cpa.state.tx.us/sch-gov_partner.htm*. Accessed 9/12/2007.

SF Environment. 2006. *Three-Year Report on the Status of the Precautionary Principle Ordinance*. Available: *http://www.sfenvironment.org/downloads/library/pp3yearreport.doc*. Accessed 12/1/2009.

SF Environment. 2007A. *Green Purchasing Program*. Available: *http://www.sfenvironment.org/our_programs/topics.html?ssi=9&ti=22*. Accessed 5/29/2007.

SF Environment. 2007B. *Review on Implementation of San Francisco's Precautionary Purchasing Ordinance, July 2005 – July 2007*. Available: *http://www.sfenvironment.org/our_policies/overview.html?ssi=14*. Accessed: 12/1/2009.

SF Environment. 2008A. *SF Launches Website for Green Products*. Available: *http://www.sfenvironment.org/our_sfenvironment/press_releases.html?topic=details&ni=630*. Accessed on 1/18/2011.

Tacoma. 2006. *Take it Back Network*. Available: *http://www.cityoftacoma.org/Page.aspx?hid=1366#Take*. Accessed 9/6/2007.

Tigard. 2007. *Tigard Upgrades to Energy-Efficient Water Pumping Stations*. Available: *http://www.tigard-or.gov/news/07-01-26_water_pump_stations_upgraded.asp*. Accessed 12/1/2009.

Universities Council on Water Resources. 1999. *Realizing the Benefits from Water Conservation. W. Maddaus*. Available: *http://www.ucowr.org/updates/pdf/V114_A2.pdf* . Accessed 10/29/2007.

U.S. DOE. 2000. *WATERGY Software and Manual*. Federal Energy Management Program. Available: *http://www1.eere.energy.gov/femp/information/download_watergy.html*. Accessed 12/07/2007.

U.S. DOE. 2004. *Additional Financing Sources and Considerations*. Available: *http://www1.eere.energy.gov/buildings/financial_opportunities.html*. Accessed 12/1/2009.

U.S. DOE. 2009. *Personal communication with DOE*. September 2009.

U.S. EPA. 2000. *State and Local Pioneers: How State and Local Governments Are Implementing Environmentally Preferable Purchasing Policies*. Available: *http://www.epa.gov/epp/pubs/case/statenlocal.pdf*. Accessed 12/1/2009.

U.S. EPA. 2002. *Program Requirements for Light Commercial HVAC*. Available: *http://www.energystar.gov/ia/partners/product_specs/program_reqs/lchvac_prog_req_v2_2.pdf*. Accessed 10/8/2007.

U.S. EPA. 2003A. *Energy Efficiency and Indoor Air Quality in Schools*. Available: *http://www.epa.gov/iaq/schools/pdfs/publications/ee_iaq.pdf*. Accessed 4/16/2007.

U.S. EPA. 2003B. *Cash Flow Opportunity Calculator*. Available: *http://www.energystar.gov/ia/business/cfo_calculator.xls*. Accessed 10/8/2007.

U.S. EPA. 2003C. *Financing Energy Efficiency Projects. Government Finance Review, February 2003*. Available:*http://www.energystar.gov/ia/business/government/Financial_Energy_Efficiency_Projects.pdf*. Accessed 5/29/2007.

U.S. EPA. 2003D. *Financing Profile of Success: Miami-Dade County Public Schools*. Available: *http://www.energystar.gov/ia/business/121202profile_MDCPS.pdf*. Accessed 2/4/2008.

U.S. EPA. 2004A. *Building Upgrade Manual*. Available: *http://www.energystar.gov/ia/business/EPA_BUM_Full.pdf*. Accessed 1/12/2007.

U.S. EPA. 2004B. *Innovative Financing Solutions: Finding Money for Your Energy Efficiency Projects*. Available: *http://www.energystar.gov/ia/business/COO-CFO_Paper_final.pdf*. Accessed 2/4/2008.

U.S. EPA. 2006. *Greening Your Purchase of Copiers*. Available: *http://www.epa.gov/epp/pubs/copiers.htm*. Accessed 12/1/2009.

U.S. EPA. 2007A. *High Efficiency Toilets*. Available: *http://www.epa.gov/watersense/products/toilets.html*. Accessed 9/4/2007.

U.S. EPA. 2007B. *Purchasing and Procurement Savings Calculator: Vending Machines*. Available: *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=VMC*. Accessed 10/8/2007.

U.S. EPA. 2007C. *Purchasing and Procurement Savings Calculator: Power Management*. *http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_users*. Accessed 12/1/2009.

U.S. EPA. 2007D. *Purchasing and Procurement Savings Calculator: Copiers*. Available: *http://www.energystar.gov/index.cfm?c=copiers.pr_proc_copiers*. Accessed 10/8/2007.

U.S. EPA. 2007E. *Purchasing and Procurement Savings Calculator: Water Coolers*. Available: *http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/CalculatorBulkPurchasingWaterCooler.xls*. Accessed 12/1/2009.

U.S. EPA. 2007F. *The WaterSense Label*. Available: *http://www.epa.gov/WaterSense/pubs/label.htm*. Accessed 12/10/2007.

U.S. EPA. 2007G. *Clean Energy: Air Emissions*. Available: *http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html*. Accessed 1/23/2008.

U.S. EPA. 2007H. *ENERGY STAR Product Specifications*. Available: *http://www.energystar.gov/index.cfm?c=product_specs.pt_product_specs*. Accessed 12/11/2007.

U.S. EPA. 2007I. *Purchasing and Procurement*. Available: *http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing*. Accessed 12/8/2007.

U.S. EPA. 2008A. *Key Benefits of ENERGY STAR Products*. Available: *http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing_key_benefits*. Accessed 11/13/2009.

U.S. EPA. 2008B. *Frequently Asked Questions about Reflective Roof Products*. Available: *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=RO*. Accessed 1/23/2008.

U.S. EPA. 2008C. *ENERGY STAR Products: Procurement Language*. Available: *www.energystar.gov/ia/products/appliances/res_appliances_procure.doc-2010-12-07http://www.energystar.gov/index.cfm?c=bulk_purchasing.pr_proc_generic*. Accessed 1/23/2008.

U.S. EPA. 2009A. *ENERGY STAR Overview of 2008 Achievements*. Available: *http://www.energystar.gov/ia/partners/publications/pubdocs/2008%204%20pager%203-12-09.pdf*. Accessed 11/13/2009.

U.S. EPA. 2009B. *Personal communication with ENERGY STAR Labeling Branch*, September 2009.

U.S. EPA. 2011. *ENERGY STAR Commercial LED Lighting*. Available: *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=LTG*. Accessed 2/15/2011.

U.S. EPA and U.S. DOE. 2008. *Purchasing and Procurement Savings Calculator: CFLs*. Available: *http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/CalculatorCFLsBulk.xls*. Accessed 2/20/2008.

U.S. EPA and U.S. DOE. UNDATED(A). *ENERGY STAR Products: Displays (for Consumers)*. Available: *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=MO*. Accessed 11/13/2009.

U.S. EPA and U.S. DOE. UNDATED(B). *ENERGY STAR Products: Light Commercial Heating & Cooling (for Consumers)*. Available: *http://www.energystar.gov/index.cfm?c=lchvac.pr_lchvac*. Accessed 11/13/2009.

U.S. EPA and U.S. DOE. UNDATED(C). *Enterprise Servers for Consumers*. *http://www.energystar.gov/index.cfm?c=ent_servers.enterprise_servers*. Accessed 11/16/2009.

Washington, DC. 2004. *ENERGY STAR Efficiency Act Amendment of 2004*. Available: *http://www.dccouncil.washington.dc.us/images/00001/20041214143141.pdf*. Accessed 5/28/2007.

Westminster. 2005. *Agenda Memorandum: December 12, 2005*. Available: *http://www.ci.westminster.co.us/agendas/ag121205.pdf*. Accessed 12/1/2009.

WSCA. 2010. *Western States Contracting Alliance*. Available: *http://www.aboutwsca.org/content.cfm/id/WSCA?CFID=510959108&CFTOKEN=71453969*. Accessed 1/24/2011.

U.S. ENVIRONMENTAL PROTECTION AGENCY
1200 PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20460

WWW.EPA.GOV/STATELOCALCLIMATE/RESOURCES/STRATEGY-GUIDES.HTML

EPA-430-R-09-036