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EPA

Environmentally Preferable Purchasing Program

State and Local Government Pioneers

How State and Local Governments Are Implementing Environmentally Preferable Purchasing Practices

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Environmentally Preferable Purchasing Program

Environmentally preferable purchasing ensures that environmental considerations are included in purchasing decisions, along with traditional factors such as product price and performance. The EPP program provides guidance for federal agencies to facilitate purchases of goods and services that pose fewer burdens on the environment.

For more information, visit www.epa.gov/oppt/epp

Disclaimer

This report provides an overview of recent state and local government environmentally preferable purchasing (EPP) initiatives and includes references to specific products and technologies. These references are included to provide additional details and do not constitute endorsement or recommendation for use by the U.S. Environmental Protection Agency (EPA). This report is intended to show representative state and local government EPP activities. It does not attempt to include the efforts of every state or local government initiating such activities or every activity initiated by the state and local governments highlighted in this report.

EPA's EPP Program is interested in collecting additional information about the EPP activities and experiences of state and local governments. This information might be included in future case studies, newsletters, or Web pages to further promote EPP. Please share any insights, comments, or recommendations with:

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Foreword

The federal government purchases more than $250 billion worth of goods and services annually.† Recognizing that purchasing decisions can have environmental consequences, the federal government is incorporating environmental considerations into its purchasing processes. As mandated in Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, the U.S. Environmental Protection Agency (EPA) issued guidance to help federal agencies consider environmental concerns when making purchasing decisions. EPA's guidance establishes general principles to help identify products and services that have a reduced impact on human health and the environment.

EPA, through its guidance, recognizes environmentally preferable purchasing (EPP) as a dynamic and flexible concept that government agencies will not necessarily implement the same way depending on the product category or case-specific criteria. To demonstrate how EPP principles are being applied, EPA is documenting pilot projects undertaken by federal agencies, state and local governments, and the private sector.

This report highlights a number of state and local governments' EPP activities. It explores how state and local governments have incorporated environmental concerns into a wide variety of purchasing efforts and product categories. We hope the lessons and insights documented here will help you and your organization incorporate or expand environmental considerations as part of your purchasing decisions.

For additional information

To find out more about the EPP Program or to access existing resources to help identify and purchase environmentally preferable products, please visit the program's Web site at **www.epa.gov/oppt/epp**.

† *The Public Purchaser*, September 1, 2000, **www.governing.com/tppchart.htm**.

Contents

Acronyms

ABAG	Association of [San Francisco] Bay Area Governments
BES	Bureau of Environmental Services
CFC	Chlorofluorocarbon
CNG	Compressed natural gas
CPG	Comprehensive Procurement Guidelines
DAS	Department of Administrative Services
DEH	Department of Environmental Health
DOA	Department of Administration
EPA	U.S. Environmental Protection Agency
EPP	Environmentally Preferable Purchasing
HCFC	Hydrochlorofluorocarbon
HDPE	High-density polyethylene
HVAC	Heating, ventilation, and air conditioning
IAQ	Indoor air quality
IPM	Integrated pest management
MSDS	Material safety data sheet
NACo	National Association of Counties
NOx	Nitrogen oxide
OEA	Office of Environmental Assistance
P2	Pollution Prevention
PVC	Polyvinyl chloride
RFP	Request for proposal
SOx	Sulphur oxide
SWD	Solid Waste Division
VOC	Volatile organic compound

Introduction

State and local governments will spend more than $385 billion on goods and services in 2000.[1] Like the federal government, many of them are attempting to reduce their environmental impacts by purchasing products and services they consider environmentally preferable. These environmental purchasing decisions range from relatively simple recycled-content paper purchases to complex specifications for "green buildings" that incorporate a wide variety of environmental attributes such as increased energy and water efficiency, pesticide-free lawn maintenance, and numerous low-toxicity, biobased, and recycled-content building materials.

Based on conversations with more than 125 officials from more than 60 state and local governments, this report highlights some of the activities state and local governments are pursuing to reduce the environmental impacts of their purchasing decisions. It describes how they are incorporating environmentally preferable purchasing (EPP) principles, the types of activities under way, the types of products being examined and purchased, and the lessons drawn from their experiences.

An appendix to this report provides a brief update on the activities of the state and local governments the U.S. Environmental Protection Agency (EPA) featured in a related 1996 publication, *A Study of State and Local Government Procurement Practices that Consider Environmental Performance of Goods and Services* (EPA742-R-96-007). The 1996 publication examined the early "green purchasing" efforts of six state and county governments—**King County**, **Washington**; **Maine**; **Minnesota**; **San Diego County**, **California**; **Washington**; and **Wisconsin**. As the earlier report details, most of their early purchasing activities focused on buying recycled-content products. Since that report was published, several of the programs have expanded their efforts beyond recycled-content purchases and are now examining multiple environmental attributes rather than focusing solely on recycled content. Although some of the original six state and local governments are discussed throughout this report, the appendix provides an update on all of them. It places their recent activities in historical context and highlights the evolution of their "green" purchasing activities.

Selecting Report Participants

The research for this report began by investigating the ongoing efforts of the six subjects featured in EPA's 1996 report. To broaden the scope of this report beyond those initial subjects, additional participants were selected from news reports, press releases, Web sites, and other information on the EPP-related activities of numerous state and local governments. Other participants were selected from the subscriber database for the *EPP Update*, a newsletter published by EPA's Environmentally Preferable Purchasing Program. Announcements encouraging

[1] *The Public Purchaser*, September 1, 2000, **www.governing.com/tppchart.htm**.

potential subjects to contact EPA were included in an issue of the *EPP Update* and posted on EPPNet, a list server dedicated to EPP issues and maintained by the Northeast Recycling Council.[2] In addition, the National Association of Counties (NACo) provided a list of governments that had requested its *Local Government Environmental Purchasing Starter Kit*, a collection of materials and resources for establishing or expanding an EPP program.[3]

As a result of these efforts, an initial list of more than 80 state and local government contacts was compiled. Each was called and asked to discuss their EPP activities in an unscripted conversation. While EPA was unable to reach some contacts, many contacts provided additional names. Ultimately, EPA reached more than 125 officials from more than 60 state and local governments. EPA did not use a survey or ask a standard set of questions. Instead, each respondent was asked a series of unique questions relevant to the subjects detailed in this report.

While almost everyone contacted had a buy-recycled program, EPA elected to focus on the 46 state and local governments examining a wider variety of environmental attributes. Because there are already numerous reports and case studies describing buy-recycled or energy efficiency efforts, this study focuses on jurisdictions examining other environmental attributes in their purchasing decisions.

Defining Environmentally Preferable Purchasing

According to Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition* (September 14, 1998) and its predecessor, Executive Order 12873, *Federal Acquisition, Recycling, and Waste Prevention* (October 20, 1993), EPP means selecting "products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose." As mandated in these Executive Orders, EPA proposed and later finalized EPP guidance and provided additional clarification to help federal agencies comply with the Executive Order mandates to buy environmentally preferable products and services.[4]

EPA recommends that purchasers select products that maximize beneficial environmental attributes and minimize adverse environmental effects without compromising the traditional price and performance considerations that influence every purchasing decision. EPA encourages purchasers to evaluate the multiple environmental impacts of every product throughout its life cycle—raw material acquisition, manufacture, packaging and distribution, use, and disposal—and to select products with environmental attributes that minimize those impacts. A product's environmental attributes can include:

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[2] For information on joining EPPNet, visit **www.nerc.org/eppnet.html**.

[3] For information on obtaining NACo's EPP toolkit, visit **www.naco.org/programs/environ/purchase.cfm**.

[4] EPA's *Final Guidance on Environmentally Preferable Purchasing* was published in the Federal Register on August 20,1999. In addition to detailed descriptions of EPP's five guiding principles, the guidance includes specific recommendations, a list of resources, a glossary, and a list of environmental attributes to consider when making purchasing decisions. Links to the guidance and to the Executive Orders are available on the EPP Web site at **www.epa.gov/oppt/epp/docback.htm**. Copies also are available by calling EPA's Pollution Prevention Information Clearinghouse at 202 260-1023.

- Energy efficiency.
- Recycled content.
- Recyclability.
- Water efficiency.
- Resource conservation.
- Greenhouse gas emissions.
- Waste prevention.
- Renewable material percentages.
- Adverse effects to workers, animals, plants, air, water, and soil.
- Toxic material content.
- Packaging.
- Transportation.

Federal Government Definition of Environmentally Preferable Purchasing

Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, mandates federal agencies to identify and purchase environmentally preferable products and services. It defines them as:

"...products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service."

Many state and local governments, including **Cincinnati**, **Ohio**; **Jackson County** and **Kansas City, Missouri**; **King County** and **Seattle, Washington**; and **Washoe County, Nevada,** use language almost identical to the federal Executive Orders to define EPP in their executive orders, statutes, and written policies. Others provide slightly different, but very similar definitions.

Boulder, Colorado's environmental purchasing policy directive, for example, defines environmentally preferable products as "a material or product [that] is durable, repairable, reusable, or recyclable; has a minimum of packaging, toxic content, or chemical hazard potential; is resource or energy efficient in any or all phases of its manufacture, use, and disposal; or in its use or disposal minimizes or eliminates the [c]ity's potential environmental liability."

Similarly, a March 25, 1998, **Pennsylvania** executive order requires the "procurement of environmentally friendly commodities and services [that] avoid the use of toxics, minimize use of virgin materials and energy in their production, have a long useful life, and can be recycled afterwards."

Seattle's EPP policy, like EPA's EPP guidance, provides a list of environmental issues to consider when comparing the environmental preferability of potential purchases. It states that the "environmental factors to be considered in selecting products include [a] life cycle analysis of:

- pollutant releases;
- waste generation;
- recycled content;
- energy consumption;
- depletion of natural resources; and
- potential impact on human health and the environment."

As federal, state, and local government definitions suggest, EPP involves examining the multiple environmental impacts of products or services throughout their life cycles, from resource extraction to ultimate disposal. While examining a single environmental attribute such as recycled content or energy efficiency is important when making purchasing decisions, EPP promotes the examination of multiple environmental attributes such as recycled content *and* energy efficiency *and* toxicity. An increasing number of state and local governments are adopting EPP definitions that embrace the multiple attribute concept. In practice, however, many of them continue to emphasize single environmental attributes, particularly recycled content.

Why Emphasize Multiple Environmental Attributes?

The importance of examining multiple environmental attributes when evaluating the environmental preferability of products and services is similar to the importance of examining multiple nutritional factors when selecting healthier foods. Comparing foods based on a single factor such as the number of calories they contain is better than no basis for comparison. It would be better, however, to consider additional information such as fat, sodium, and vitamin content, along with other relevant nutritional factors. Similarly, when comparing the environmental preferability of a product or service, a more accurate assessment can be made by examining a variety of relevant environmental attributes such as energy efficiency, recycled content, renewable resource use, toxicity, and others recommended in EPA's guidance.

In some cases, people with specific dietary needs emphasize one nutritional factor above all others. For example, someone with high blood pressure might concern themselves more with sodium content than with any other nutritional factor. Similarly, some communities might emphasize a single environmental impact or attribute in response to a particular environmental concern. An arid community, for example, might concern itself most with protecting water quality, while a smog-prone area might be more concerned with air pollution. Although focusing on a single attribute in these cases makes sense, EPA still encourages purchasers to consider a broad variety of environmental attributes just as dieticians still encourage consumers to examine multiple nutritional factors.

Beyond Buy-Recycled

Buying recycled-content products is often an important part of many EPP programs. Recycled-content purchases help conserve limited resources; reduce landfill capacity pressures or potentially hazardous incinerator emissions; decrease water and air pollution, including some greenhouse gas emissions; and save energy. These purchases also create jobs by establishing markets for the recycled material collected by households and businesses.[5] These benefits have led countless state and local governments to purchase a wide variety of recycled-content products. Some of the most commonly purchased recycled-content items, as reported by the participants in this report, include the following:

- Carpet
- Concrete
- Engine coolants
- Office products
- Paper
- Parking stops
- Plastic lumber
- Re-refined motor oil
- Retread tires
- Toner cartridges
- Traffic cones
- Trash bags

EPA's Comprehensive Procurement Guidelines (CPG) program—the federal government's "buy-recycled" program—promotes the purchase of these and other recycled-content products by publishing a list of available recycled-content products, recommending recycled-content percentages, and providing lists of available product vendors. Many state and local governments contacted for this study built their buy-recycled programs around the CPG recommendations.[6]

Representative Fiscal Year 1999 Recycled-Content Purchases

- Delaware—$5.7 million
- Fairfax County, Virginia—$1.3 million
- Kalamazoo County, Michigan—$77,000
- King County, Washington—$2.8 million
- Massachusetts—$43 million
- Ohio—$2.1 million

Several state and local government officials contacted for this report explained that a successful buy-recycled program requires an environmental commitment. Once the commitment is made, it is relatively easy to see how the effort expands beyond recycled-content purchasing to a broader environmental purchasing arena, including the multiple attribute EPP approach. Incorporating energy efficiency, low toxicity, and biobased concerns into product selections seems to many a natural extension of existing buy-recycled programs.

[5] For additional information on the benefits of recycled-content purchasing, visit the Office of the Federal Environmental Executive's Web site at **www.ofee.gov**.

[6] Federal government agencies and state and local governments using federal funds are required under the Resource Conservation and Recovery Act to purchase recycled-content items identified by EPA's CPG program. For additional information on these requirements and the CPG program, visit **www.epa.gov/cpg**.

Many buy-recycled programs began with an initial emphasis on recycled-content paper purchases. Paper was one of the first widely available, high-quality recycled-content products. Recycled-content paper purchases still represent the largest volume of recycled-content purchases (in terms of dollars spent) among the state and local governments contacted for this report.

Due to the success of many state and local governments' recycled-content paper purchases, those interested in including other environmental factors frequently examine their paper purchases. In addition to recycled-content paper, there are high-quality papers available that are chlorine free (either process chlorine free or totally chlorine free)[7] and/or made from a variety of "tree-free" fibers such as denim, kenaf, industrial hemp, sugarcane, seaweed, cotton residue, tobacco, or coffee bean shells.

A Brief Buy-Recycled History

Through the 1976 Resource Conservation and Recovery Act (RCRA), EPA was given authority to control hazardous waste at all levels (e.g., generation, transportation, treatment, storage, and disposal). RCRA also requires federal agencies to purchase products with the highest recovered material level practicable. EPA identifies these products, recommends recycled-content percentages, and recommends best practices for procuring recovered-content products through its Comprehensive Procurement Guideline (CPG) program.

Recycling programs were also initiated throughout the 1970s and 1980s in response to the "garbage crisis"—the realization that landfill space in some parts of the country is limited. Recycling keeps valuable materials out of landfills, thereby reducing pressure on landfill capacity. Perhaps even more important, it also reduces pressure on natural resources because fewer raw materials and less energy are necessary to manufacture recycled-content products. It takes 95 percent less energy to recycle aluminum, for example, than to make aluminum from bauxite ore. The domestic steel and paper industries also enjoy significant resource and energy savings through their use of recovered materials.

To make recycling economically viable, federal, state, and local governments began encouraging people to "buy recycled" in order to "close the recycling loop." Buying recycled-content products creates an incentive for manufacturers to use materials that otherwise would have been disposed of in landfills or incinerators. The buy-recycled movement firmly established that purchasing decisions can have important environmental and economic impacts.

As awareness of different environmental concerns has increased—rain forest destruction, species extinction, nonrenewable resource depletion, toxic chemical use, and chemical endocrine disruptors, among others—individuals and institutional purchasers are recognizing that purchasing decisions can affect each of these issues. As a result, consumers and governments are expanding their environmental purchasing decisions beyond recycled content and investigating a broader range of environmental attributes such as low-toxicity and biobased products.

[7] "Totally chlorine free" is a term used for virgin papers (paper containing zero postconsumer recycled content) and means no chlorine compounds are used to bleach the paper during the papermaking process. "Process chlorine free" is reserved for recycled-content papers and means that no chlorine compounds are used to rebleach the paper during the papermaking process. Recycled-content paper cannot be totally chlorine free unless all discarded paper used to manufacture the recycled paper was chlorine free, which is a highly unlikely occurrence. For additional information, visit the Chlorine Free Products Association Web site at **www.chlorinefreeproducts.org**.

Portland, Oregon, for example, began its buy-recycled program years ago with an initial emphasis on paper. As the city expands its environmental purchases to include a wider variety of environmental attributes, it is once again beginning with its paper purchases. Portland's Bureau of Environmental Services (BES) is purchasing a high recycled-content, process chlorine free paper manufactured by a local paper mill without any recent compliance issues with federal or state environmental regulators. Because of the paper's environmental features (recycled content, process chlorine free, local supplier, and environmentally conscious manufacturer), BES is willing to pay $3 per ream instead of $2.50. BES officials believe the price will drop, however, as additional purchasers begin demanding paper with these and other environmental attributes. As evidence, BES cites the gradual erosion of price premiums for recycled-content paper. Despite high price disparities when it was first introduced, recycled-content paper is now priced almost evenly with traditional virgin-content paper in some parts of the country.

Additional information on state and local government efforts to purchase environmentally preferable papers is included on page 38 of this report.

Like Portland and many other state and local governments, **Massachusetts**, **Minnesota**, and **King County, Washington,** are each building their multi-attribute purchasing programs from highly successful buy-recycled programs.

- **King County**'s recycled-content program has expanded to include: advanced energy efficiency purchases; low-toxicity cleaning products; renewable energy projects using electricity generated from solar energy and fuel cells; highly resource-efficient "green" buildings, including one that relies on natural cooling instead of air-conditioners and one that collects rainwater to flush toilets; and integrated pest management techniques that drastically reduce the use of chemicals to control rodents, insects, and weeds.

- **Massachusetts** publishes the *Recycled and Environmentally Preferable Products and Services Guide for Commonwealth of Massachusetts State Contracts*, a 46-page publication that makes it easy for those using state contracts to identify and purchase products and services the Commonwealth considers environmentally preferable.[8] In addition to numerous recycled-content products, it includes information about low-toxicity cleaning products; biobased lubricants; energy-efficient lamps, ballasts, and office equipment; electric vehicles; a swimming pool ionization process that reduces chlorine requirements by up to 80 percent; and integrated pest management services.

- **Minnesota** has a list of 97 state contracts for "Environmentally Responsible Products and Services," a majority of which are part of the state's successful effort to buy recycled-content and refurbished products. The list also includes alternatively fueled vehicles; low-toxicity cleaning supplies; energy-efficient computer equipment; mercury-free batteries; energy-efficient,

[8] Visit Massachusetts' EPA Program Web site at **www.state.ma.us/osd/enviro/enviro.htm** for a copy of this and other EPP resources.

low-mercury fluorescent lamps; solvent-free paint; soy ink; and process chlorine free, recycled-content paper.

Other state and local governments are launching efforts to expand their buy-recycled programs into broader EPP initiatives. **Ohio**, for example, recently adopted a more comprehensive EPP perspective to expand its environmentally preferable purchases beyond recycled-content products. The state intends to build on its buy-recycled success, which included purchasing more than $3.1 million in recycled-content products in 1997. At the time of this publication, Ohio EPA's Office of Pollution Prevention was awaiting the governor's signature on an executive order emphasizing EPP's importance. Ohio EPA then plans to launch an educational campaign and broaden its research of products and services it can easily incorporate into its EPP efforts.

Washington, DC, is considering launching an EPP initiative, but unlike Ohio, it does not currently have an established buy-recycled initiative upon which to base it. The mayor recently signed an executive order promoting EPP, and city officials are currently determining the best way to initiate the effort. Based on the advice and experience of others, the city might begin by establishing a buy-recycled effort and then expand into the broader EPP perspective after the effort is firmly established. City officials are also considering immediately adopting some multi-attribute purchases for items such as cleaning products and construction and building renovation services because other federal, state, and local government agencies have completed so much groundwork in these arenas. (Additional information about cleaning products and green building purchases is included on pages 22 and 28, respectively.)

During **Connecticut**'s 1999 legislative session, the legislature considered an act establishing a comprehensive policy for the purchase of environmentally preferable products that defined EPP consistently with the federal Executive Order and EPA's EPP guidance. The act would have required Connecticut's Department of Administrative Services to "designate environmentally preferable products and establish minimum standards and specifications for their procurement and use." According to a state official familiar with the legislative proceedings, there was widespread support for the act. It was not adopted, however, because politically unpopular riders were attached to the final bill.

EPP As a Pollution Prevention Activity

Like federal government agencies, state and local governments are recognizing that EPP can be an integral part of any pollution prevention effort. Although many state and local governments describe their EPP efforts as extensions of their buy-recycled programs, others portray EPP as part of a broader pollution prevention strategy. **North Carolina**'s EPP executive order, for example, is part of a broader "Sustainable North Carolina" initiative. Similarly, **Vermont** includes EPP as part of its "Clean State" initiative, and **Seattle, Washington**'s EPP program is part of an environmental management system the city is implementing.

Portland, Oregon, published its "Sustainable City Principles" in 1994. With a broad goal to "promote a sustainable future that meets today's needs without com-

promising the ability of future generations to meet their needs," the principles include a list of 10 activities for elected city officials and staff to implement. Included on the list along with related directives to ensure environmental quality, use resources efficiently, and prevent additional pollution, is a mandate to "purchase products based on long-term environmental and operating costs, and find ways to include environmental and social costs in short-term prices. Purchase products that are durable, reusable, made of recycled materials, and non-toxic."

As part of a citywide pollution prevention effort, **Phoenix, Arizona**, adopted an interim purchasing policy for hazardous materials in 1996. The policy specifically cites purchasing as a critical pollution prevention strategy. While some purchasing initiatives were implemented immediately, because of competing priorities and limited funding, it took a few years for program momentum to build. From December 1999 to May 2000, however, the city evaluated more than 1,000 chemical products in 21 categories, and product evaluations are continuing. Numerous environmental attributes that "may cause harm or injury to persons...or which may negatively impact the environment" are considered during this evaluation of hazardous materials (e.g., flammables, carcinogens, pesticides, mutagens, ignitables, volatile organic compounds [VOCs], chlorofluorocarbons [CFCs]). City employees enter results into a database that records the color-coded product evaluation results. The colors indicate whether the chemical is safe to use, whether to consider alternatives, or whether to avoid the chemical completely if possible. The system makes it easier to incorporate environmental considerations into purchasing decisions and helps the city meet its pollution prevention objectives. It will soon be available online.

Lee County, Florida, incorporated EPP into an effort to eliminate the generation of hazardous waste from its vehicle fleet maintenance operations. The county avoids purchasing products containing high VOC levels or those that result in the generation of regulated wastes. Adopting these efforts led the county to substitute chlorinated-solvent brake cleaner with a nonchlorinated solvent; to facilitate recycling and recovery operations by segregating waste streams; and to replace aerosol spray cans with refillable, air-pressurized dispensers. These and other EPP-related efforts reduced the county fleet's hazardous waste generation to zero and save the county approximately $16,800 annually in avoided waste disposal costs.

Although **Ohio**'s pollution prevention program does not currently have a formal EPP program, EPP considerations have been included as part of its Pollution Prevention (P2) Loan Program, which lends money to small- and medium-sized businesses to implement pollution prevention strategies. The program lends $25,000 to $150,000 at an interest rate two-thirds of prime to finance pollution prevention activities. The loans do not cover compliance activities, which are activities businesses must complete to meet federal, state, or local environmental regulations. Instead, the funded activities are used to move the businesses "beyond compliance."

The P2 Loan Program lends money to companies to help them practice EPP. One company, for example, received a loan to purchase new painting equipment that would significantly lower VOC emissions. Other loans have allowed dry cleaners to purchase new equipment that significantly reduces or eliminates emissions of perchlorethylene, a suspected human carcinogen.

EPP Strategies

State and local governments have adopted a variety of strategies to promote EPP. These activities include cooperative purchasing efforts, price preferences, "best value" purchasing, "green teams," vendor fairs, third-party certifiers, incentive programs, employee training, and vendor surveys. This section includes a brief overview of these efforts and highlights a few examples of each strategy.

Cooperative Efforts

EPP practitioners at state and local levels have adopted cooperative efforts allowing them to pool information and resources to evaluate environmental preferability issues and to purchase selected products at discounted prices. One of the more common strategies is allowing local governments within a state to purchase products through state contracts. Several states promote this practice, including **Massachusetts**, **Minnesota**, **Missouri**, **Ohio**, **Texas**, **Vermont**, and **Washington**. Ohio's Cooperative Purchasing Program, for example, allows townships, municipalities, school districts, public libraries, regional transit authorities, park districts, and others to buy goods and services through state contracts.

A state's larger purchasing power generally allows it to negotiate better prices for goods and services than local governments could negotiate for themselves. The benefits of this approach are even more advantageous if the state uses its purchasing power to include environmental preferability requirements into its contracts. Because **Massachusetts** and **Minnesota** are proactive about incorporating environmental concerns into their state contracts, local governments within these states have greater access to reasonably priced products and services with environmental attributes than local governments within other states.

Minnesota's Cooperative Purchasing Venture allows a very wide variety of participants to purchase goods and services under contract terms negotiated by the state. Any city, county, town, or school district within the United States can join the cooperative for an annual $350 fee. Joining allows purchasers to buy from the Minnesota state contracts.

Any city, county, town, or school district within the United States joining **Minnesota**'s Cooperative Purchasing Venture can purchase goods and services from Minnesota state contracts. For additional information, visit **www.mmd.admin.state.mn.us/cpv2.htm**.

NACo has a series of national contracts allowing county governments to buy goods and services at prices that are usually better than individual counties could negotiate for themselves. NACo is currently examining opportunities to incorporate EPP concerns into future contracts.

The Western States Contracting Alliance, composed of 10 Western states, recently combined their purchasing power for a large computer and computer peripherals (e.g., printers and scanners) package. While the primary motivation for this cooperative venture was saving money, the participating states now recognize the strength of their combined purchasing power. As a result, some of them are beginning to investigate ways of incorporating environmental concerns into future Alliance purchases. **Washington**, for example, is working with one of the computer suppliers to improve the environmental preferability of their packaging materials.

While local governments are allowed to purchase off of state contracts, some are unaware of the possibility, and others prefer to buy from local vendors rather than from those offered under state contracts. As a result, **Massachusetts** has been actively incorporating local vendors from different regions within the Commonwealth into its contracts. Massachusetts is also actively promoting the Commonwealth contracts' advantages through vendor fairs, workshops, and a local outreach unit. Commonwealth purchasing officials frequently emphasize the cost savings when talking with local purchasing officials. They might compare, for example, the cost of recycled-content paper at a local office supply store with the price available on the Commonwealth contracts. When possible, Massachusetts also includes local government representatives on the state purchasing teams to ensure their interests are properly considered.

State and local governments are also engaged in other cooperative, EPP-related efforts. The Southwest **Ohio** Local Government Pollution Prevention Collaborative, for example, held an EPP training session in September 1999 that described opportunities to integrate pollution prevention practices and purchasing strategies. Some of the session participants believe it might lead to a regional focus on EPP.

Kansas City and **Jackson County, Missouri**, are working together to implement EPP policies they developed concurrently. Their efforts included developing a common "green purchasing" policy, researching environmentally preferable products, and developing purchasing agreements that both governments can use. Most of their efforts currently focus on recycled-content products, although they also are exploring increased energy efficiency, green building standards, and low-toxicity cleaning products.

After the city of **Oakland, California**, adopted an antidioxin resolution in February 1999, the Association of [San Francisco] Bay Area Governments (ABAG), of which Oakland is a member, adopted a similar resolution the following September. Concerned about the human health and environmental effects of dioxin, a known human carcinogen, the resolution encourages the purchase and use of "less-toxic, non-chlorinated, sustainable alternative products and processes, such as chlorine-free paper and PVC-free plastics to the extent possible." ABAG is currently working on a strategy to implement the resolution.

In July 2000, **Chicago, Illinois**, and 47 other nearby government bodies announced they would begin purchasing about 400 megawatts of electricity as a group. Twenty percent of the power must come from clean, renewable sources such as solar or wind. (For additional information on green power purchases, see page 32.)

Price Preferences

When new products are introduced in the marketplace, they are typically more expensive than comparative products that are already well-established, due in part to limited production capabilities and product availability. As product demand and production capabilities increase, the price of the product tends to decrease. This was true for a wide variety of consumer products such as color televisions, VCRs, CD players, computers, and DVD players. It was also true for recycled-content products such as paper, which is now priced almost the same as its traditional counterpart in some parts of the country.

To encourage the purchase of recycled-content and environmentally preferable products that are sometimes more expensive than their traditional counterparts, many state and local communities have established price preferences. A price preference acknowledges a buyer's willingness to pay extra for products with specific environmental features such as recycled content. A 10 percent price preference, for example, allows a buyer to reduce the cost of a recycled-content product by 10 percent when comparing it with the cost of its virgin-content counterpart. As a result, a buyer instructed to purchase the lowest priced product could consider a recycled-content product priced at $100 to be equivalent, for cost comparison purposes, to a virgin product priced at $90. Under this scenario, the buyer could elect to buy the recycled-content product for $100, even though it was more expensive, because the price fell within the 10 percent price preference established for recycled-content products.

Price preferences are an important EPP strategy because many state and local governments employ a "low bid wins" purchasing strategy. Under the traditional low bid wins approach, purchasers buy the products and services available for the lowest initial cost. If two competing products meet minimum performance requirements, the lower priced product is purchased even if one performs significantly better than the other.

To retain the low bid wins strategy and still maintain a preference for environmentally preferable products, which are sometimes more expensive, numerous state and local governments have adopted price preferences. A few examples are listed below:

- **Washington** has a 10 percent price preference for any recycled-content product designated by EPA's Comprehensive Procurement Guidelines Program.[9]
- **Cincinnati, Ohio**, includes a 3 percent price preference for products it considers environmentally preferable.
- **San Diego County, California**, includes a 5 percent price preference for environmentally preferable products.
- **Vermont** has a 5 percent price preference for recycled-content products.

[9] For a current list of EPA's designated products, visit **www.epa.gov/cpg/products.htm**.

- **Santa Barbara, California**, recently increased its 5 percent price preference for recycled-content paper to 12 percent. The price difference was increased because the price difference between recycled-content and virgin paper in that part of California is greater than the original 5 percent preference.
- **King County, Washington**, has a 10 percent price preference for re-refined motor oil and a 15 percent price preference for recycled-content paper.
- **Kansas City** and **Jackson County, Missouri**, whose policies were developed collaboratively, include price preferences of up to 15 percent for products they consider environmentally preferable. The product categories include paper and paper products, alternative fuels, cleaning products, and a full range of recycled-content and refurbished products.

Although price preferences are fairly widely incorporated into EPP purchasing policies, many officials suggest price preferences are not always a very effective means for encouraging purchases of environmentally preferable products. Price preferences assume environmentally preferable products are not price competitive, which is not always true. Several commenters noted that the willingness to pay more for an environmental product could be contributing to price increases. Sellers of environmentally preferable products could be very price competitive, theoretically, but might lack any incentive because they can charge and earn more as long as price preferences exist. If this is the case, price preferences could actually limit the market penetration of green products.

Other officials explained that purchasers are reluctant to use price preference formulas, often because they are not sanctioned by relevant statutes. More than one official reported reactions similar to that of a purchaser who stated her reluctance to use the price preferences by explaining, "It is just a policy and not a mandate." As a result, many purchasers continue to buy the lowest priced products rather than competitively priced products with beneficial environmental attributes. A few officials explained that purchasers only use the price preferences if they are personally committed to promoting EPP. Otherwise, the preferences are not implemented.

An official from **King County, Washington**'s EPP Program suggested that price preferences can be problematic for recycled or environmentally preferable products. Price preferences can be effective when their purpose is to increase participation of a preferred class of vendors selling the same product with the same specifications as other vendors, such as price preferences to buy from local, small, or woman- or minority-owned suppliers. When the intention is to purchase an environmentally preferable product, however, it is likely this product will be *different* in its manufacture, feedstock, or other attributes, therefore requiring *different* specifications. Once an agency has decided to buy a different product, it can simply specify that product. "If the price and performance of low-toxicity cleaning products meet your needs, then the price of the traditional cleaning product is irrelevant," the official explained. "You're not trying to buy a traditional cleaning product. You're trying to buy low toxicity. If you want to buy oranges, it doesn't matter how expensive apples are."

Other purchasing officials suggested that while environmentally preferable products are unique compared with their traditional counterparts, it is still important to compare costs. Even when an organization is willing to pay extra for improved environmental performance, officials suggested, it is still important to know how much additional it is paying. As one commenter proposed, "The marginal benefits of improved environmental performance might not always be worth the additional cost, given competing financial priorities." Of course, others argue that it is impossible "to put a price on public health or a sustainable environment."

Best Value Purchasing

As an alternative to price preferences, several state and local governments are switching from the "low bid wins" purchasing approach to a "best value" approach for more and more purchases. With best value purchasing, purchasers can identify and consider a wider variety of factors without developing the detailed specifications required under the traditional low bid wins approach. These additional considerations can include how well the product or service provider performs, lifecycle costs (what it will cost to operate or maintain the product for 5, 10, 15, or 20 years), and environmental impacts. Instead of relying on detailed product specifications, purchasers develop product preferences that might also include specific product requirements.

The product preferences can include environmental attributes such as recycled content percentages, energy efficiency ratings, the absence of selected chemicals or chemical byproducts, toxicity ratings, and use of renewable resources. Point values can be assigned for every possible attribute. More desirable attributes receive higher point values, and less desirable attributes receive lower (or even negative) point values. When comparing competing products and services, purchasers review them against the possible point values and assign a score.

Naturally, price and performance remain important criteria. A purchasing evaluation score sheet, for example, might base 40 percent of the total score on price, 40 percent on performance, and the remaining 20 percent on environmental or other preferential purchasing considerations (e.g., local supplier, or small or woman- or minority-owned businesses).

One of the best value approach's advantages is that buyers can assign point values for desirable environmental or other attributes even if they are unsure of their availability. Low-toxicity, recycled-content widgets, for example, might not be available, but by assigning point values to both low toxicity and recycled content, buyers can make their preference for both attributes well known. Ideally, this would encourage a manufacturer to begin making them because it would have a competitive advantage. Until widgets containing both attributes are available, buyers can emphasize one of the attributes over the other by assigning it a higher point value.

Many state and local governments are adopting best value purchasing approaches, including **Massachusetts**; **Minnesota**; **Santa Monica, California**; and **King County, Washington**. **Connecticut** used to be a low bid state, but recent laws passed by the state legislature allow purchasers to switch to a best value approach.

Before passing the law, there was ample anecdotal evidence that the low bid approach was not in the state's best interest. One purchaser, for example, recalled the routine purchase of a brand of self-adhesive poster paper that did not work. Instead of sticking to the wall as designed, the paper had to be secured with masking tape or thumbtacks.

Several best value purchasing examples are described briefly in this report, including green cleaner purchases by Santa Monica, California; Massachusetts; and Minnesota (see page 22), and Massachusetts' computer purchase (page 26).

Green Teams

Because EPP requires some level of environmental knowledge that does not typically reside within most purchasing departments, several state and local governments are exploring the advantages of "green teams." Green teams are typically composed of members with specific environmental, purchasing, and product expertise. They provide a forum for individuals with different expertise and institutional perspectives to collectively address EPP opportunities.

- **Massachusetts** established the first of several Commonwealth green teams in 1995. The meetings began as a series of weekly gatherings for purchasing and environmental officials to share information on upcoming purchases and to develop working relationships between the two groups. Once the groups began working together successfully, the regular meetings evolved from weekly meetings to biweekly, monthly, and—currently—bimonthly meetings. In addition to general environmental purchasing meetings, Massachusetts has several Procurement Management Teams focusing on specific purchasing categories such as office, vehicular, computer, and facility management products and services. These teams meet as needed to discuss upcoming contracts and incorporate environmental criteria wherever possible.

- **Portland, Oregon**'s Green Team was also established in 1995. It was originally convened to raise awareness about the importance of buying recycled-content products. It is currently working with the city's Bureau of Purchases to develop a more detailed EPP policy that expands beyond the original buy-recycled emphasis.

- Several interdepartmental "commodities teams" currently review the environmental impacts of various purchases in **Seattle, Washington**. The teams look at office supplies, road materials, building and construction, printing, landscaping and grounds maintenance, desktop computers and printers, office equipment (e.g., copiers, fax machines), janitorial services and products, dry and wet cell batteries, hazardous material contracting, and lifecycle costing.

- **North Carolina**'s Division of Pollution Prevention and Environmental Assistance pays for an intern located in the Division of Purchases and Contracts. The intern serves as a conduit for the two divisions to exchange information. As a result, North Carolina's purchasing community has learned about the environmental impacts of its work, and the state's environmental division has learned about pressures faced by the purchasing

division. Both divisions have expressed hope that the new understanding will result in fresh opportunities to incorporate environmental considerations into the state's purchasing process.

- Similarly, **Vermont**'s Purchasing Division and Department of Environmental Conservation have shared a summer intern for the past 2 years through the New England Board of Higher Education Environmental Intern program. Coordinating the intern's activities has led to a closer working relationship between the two agencies.

- **Minnesota** has an informal teaming arrangement between the Department of Administration and the Office of Environmental Assistance. When a state contract is within 7 months of expiring, the Department of Administration notifies the Office of Environmental Assistance, which then reviews the available information to see if it can offer any recommendations for improving the contract's environmental performance.

The Minnesota Department of Administration also established an advisory committee known as the Environmentally Responsible Work Group. The group focuses on promoting environmental purchasing throughout the state government and includes representatives from state government and interested nonprofits. Current members include the Office of Environmental Assistance, the Recycling Association of Minnesota, the Pollution Control Agency, the Housing Finance Agency, the Veterans Home Board, and the Departments of Administration, Transportation, Natural Resources, Labor and Industry, and Economic Security.

Vendor Fairs

Several purchasing officials interviewed for this report emphasized the importance of vendor fairs for raising awareness about environmentally preferable products. Too many purchasers, officials contend, dismiss environmentally preferable products because they have never been exposed to them. Vendor fairs provide opportunities for purchasers to examine products up close and to ask specific questions about price, performance, and availability.

- **Portland, Oregon**'s Green Team organized the city's first "Green Buying Fair" in 1996. It was attended by nearly 500 city and county employees and focused primarily on buy-recycled opportunities. Following the fair, the city held an in-depth training session for 23 city employees from 12 city bureaus.

- **Massachusetts** will hold its sixth annual vendor fair in October 2000. It is expecting more than 100 vendors and more than 600 purchasers from local governments, school districts, nonprofit organizations, and the private sector. The Commonwealth also holds several training sessions and an EPP awards ceremony in conjunction with the fairs.

- On May 10, 2000, **Kansas City, Missouri**, held its first vendor fair, which attracted 56 vendors and 152 visitors. While attendance was not as high as planners had hoped, they are considering turning the vendor fair into an annual event. The planners believe future fairs will be better attended as word spreads about the city's emphasis on environmental purchasing.

Third-Party Certifiers

Recognizing that it sometimes lacks the environmental expertise necessary to evaluate the wide range of products it purchases, **Pennsylvania** has turned to outside experts. After the governor signed a 1998 executive order establishing a governmentwide goal of zero emissions, the Commonwealth embarked upon a number of pollution prevention activities, including an EPP initiative. While most of Pennsylvania's efforts to date have focused on increasing recycled-content purchases, some Commonwealth agencies are exploring multiple environmental attributes.

While Pennsylvania purchasers acknowledge the importance of making purchasing decisions based on multiple environmental attributes (e.g., recycled-content, low-VOC, chlorine-free, energy-efficient, or pollution-free production processes), they also recognize those evaluations can be challenging given limited budgets, limited time, and limited access to incomplete environmental information. To address these challenges, Pennsylvania uses environmental specifications developed by Green Seal, an independent, nonprofit environmental standards organization. The Commonwealth currently uses Green Seal's standards when purchasing paint, degreasers, and cleaning products.[10]

Incentive Programs

Many organizations are considering or implementing award programs or other incentives to encourage environmental purchasing. Rewarding purchasers helps highlight the importance of their environmental purchasing efforts, recognizes their accomplishments, and provides incentives for others to follow their example.

- NACo established an annual environmental purchasing award program in 1998. **King County, Washington**, was the first winner; **Cape May County, New Jersey**, won in 1999; and **Kalamazoo County, Michigan**, won in 2000. The award recognizes these counties' efforts to incorporate environmental concerns into their purchasing decisions.
- **King County** was also one of the first to win the National Recycling Coalition's procurement award, which it received in 1991. In 2000, the county was awarded the "Buy Recycled—Recycling at Work" award from the U.S. Conference of Mayors. The King County Environmental Purchasing Program is quick to share the credit for these awards with all the county's agencies. As one county official explained, "Public recognition, especially in an audience of peers, is a good motivator."
- EPA's WasteWise program has recognized the outstanding efforts of its federal, state, and local government, and private sector members since 1995. Although primarily focused on waste reduction and recycling efforts, the program also considers environmental purchasing efforts when evaluating potential award winners. **Washoe County, Nevada**, received the 1999 local government WasteWise Partner of the Year award for its source reduction, recycling, and purchasing activities.

[10] For additional information on Green Seal, including copies of its standards for more than 35 product categories, visit **www.greenseal.org**. EPA's recommendations for working with nongovernmental environmental organizations are available on its EPP Web site at **www.epa.gov/oppt/epp/docback.htm**.

- **Phoenix, Arizona**, instituted its own incentive programs to promote environmental purchasing throughout the city government. One incentive, which is in its pilot year, includes environmental performance as part of the annual reviews for city department directors and management staff. Departments can choose to be evaluated on one of several environmental criteria, including compliance assessments, training, and purchasing. The following year, the department staff must choose a different environmental criteria upon which to be evaluated. This ensures that environmental purchasing is an environmental evaluation criteria for every city department at some point.

  Phoenix also instituted an "On-the-Spot" award program. After leaving the city's EPP training, employees are eligible for "environmental hero" recognition in the city's environmental newsletter, and they can also earn small prizes. Participation requires employees to recommend a way to improve environmental performance, including identifying environmentally preferable products. According to one city official, several employees have enjoyed the attention their suggestions received, and the program has encouraged an environmental focus in the city's purchasing decisions.

- **Vermont**'s Clean State Council has an "Environmental Champion" program to recognize individuals and groups within the state government that are actively promoting Vermont's clean state initiative, which includes an EPP focus.

- The purchasing manager in **Kalamazoo County, Michigan**, compiles a quarterly report of county departments' EPP and recycled-content purchases. The report clearly identifies which departments are making environmental purchasing a priority and which are not. Because no manager wants to see his or her department at the bottom of the list, county managers have steadily increased their environmental purchases. Recycled-content paper purchases, for example, have climbed from 50 to 97 percent since the purchasing manager began reporting the numbers in 1993. "This suggests that you can harness peer pressure in a positive direction," explained one county official. "It can be a great incentive."

- **Massachusetts** provides grant money to local communities within the Commonwealth to establish recycling programs. To be eligible for the money, however, the local communities must also agree to establish programs to buy recycled-content and environmentally preferable products, to track purchases, and to attend the Commonwealth's vendor fairs. Massachusetts also recognizes local municipalities with buy-recycled and environmentally preferable purchasing awards at its annual vendor fair.

- When **Lee County, Florida**'s vehicle fleet management department began reducing its hazardous waste emissions to zero, the county implemented a few incentives to encourage employee involvement, including an "employee of the month" program. The fleet management department also instituted staff bonuses for EPP and waste reduction activities. During the 2-year period from 1995 to 1997 when the program was implemented, the department awarded $7,500 in bonuses. As a result of the county's effort, it currently saves almost $17,000 annually in avoided waste disposal costs.

Employee Training

Every state and local government identified in this report that considers EPP principles as part of its official purchasing strategy provides EPP training for its purchasers. While some state and local governments, such as Portland, Oregon, and Cincinnati, Ohio, have held training sessions devoted solely to EPP, most governments emphasizing EPP include it as part of routine training for purchasing officials. Minnesota, for example, requires all state purchasers to be certified by the state's Department of Administration. One way of obtaining this certification is to attend an all-day training course, which includes an EPP session. More than 600 purchasers have completed this training. Other state and local government employee training activities include the following:

- **Massachusetts** holds five to seven workshops annually for local governments within the Commonwealth. The workshops address the "who, what, and why" of environmental purchasing. They also encourage local governments to examine the environmentally preferable products available through existing Commonwealth contracts.
- **Connecticut** focuses much of its training activities on educating end-users rather than purchasing officials. In an attempt to create demand for environmental products, the state recently presented workshops on motor vehicular products (retread tires, re-refined oil, aqueous parts cleaners); heating, ventilation, and air conditioning systems; and carpeting. Additional workshops are being planned.

- In May 2000, **Kansas City, Missouri**, held several EPP training sessions in conjunction with its first EPP vendor fair. The sessions addressed green building materials, energy efficiency measures, paper and office products, fleet maintenance, and local EPP resources available from Missouri state and local governments and EPA Region 7.

Vendor Surveys

To facilitate the purchase of environmentally preferable products and services, **Pennsylvania** is circulating a letter to each of its suppliers. The letter is part of a review of the environmental impacts of the products and services the Commonwealth purchases. Pennsylvania circulated the letter in March 2000 and asked its suppliers to respond to the following inquiries:

1. Describe how your manufacturing process is environmentally responsible.
2. Describe how your product or service is environmentally responsible. Include any information about what can be done to reuse some or [all the] product instead of sending it to a landfill.
3. Describe how your packaging material is environmentally responsible.

4. Describe how your shipping, processing, distribution systems, etc. [are] environmentally responsible.

5. List any awards or recognition your company has received for being environmentally responsible.

In addition to collecting potentially useful information for evaluating the environmental preferability of future purchases, the letter was designed to raise awareness among suppliers that the Commonwealth emphasizes environmental performance in procurement decisions. At the time this report was published, the Commonwealth was not ready to discuss the effort's results.

Product Evaluation

State and local governments are evaluating the environmental impacts of a wide variety of products and services. This section provides a brief overview of some of those evaluations, including chemicals and chemical-free products, cleaning products and services, computers, "green" buildings and leases, "green" power, integrated pest management, paint, paper and paper products, and alternative fuel vehicles.

Chemicals and Chemical-"Free" Products

State and local governments use a wide variety of chemicals as part of their everyday activities. Some of these chemicals are purchased directly, and others are purchased indirectly as a result of the products and services governments buy. Several state and local governments closely track their chemical purchases in an attempt to minimize their environmental impacts. Others are attempting to buy products that do not produce or involve the use of particular chemical compounds. In particular, several avoid dioxin, a known human carcinogen produced as a byproduct of the chlorine bleaching process used in the paper and textile industries and in some plastic manufacturing. Dioxin is a particular concern because it can accumulate in the food chain, meaning humans never directly exposed to manufacturing processes can still be exposed to dioxin by consuming it in the food they eat. This section briefly describes some efforts to reduce chemical purchases or to avoid purchasing products associated with selected chemical emissions.

- **Phoenix, Arizona**, adopted an interim hazardous materials purchasing policy in 1996. Because of limited budgets and competing priorities, the policy gained momentum slowly, but the city made significant progress in the first 6 months of 2000. The city began by surveying its chemical purchases and discovered it purchased more than 5,800 different chemicals. Realizing the enormous challenge of organizing and coordinating the environmental, health, and safety impacts of such a large number of chemicals, the city sought ways to automate the process. It began by building an online database containing copies of the material safety data sheets (MSDSs) for the chemical products it purchases. City employees obtained MSDSs from a variety of sources and entered them into the database. The database is available at **www.cityofphoenix.org/ENVPGM/envidx.html**, where it can be used by purchasers seeking to reduce the environmental impacts of their purchasing decisions.

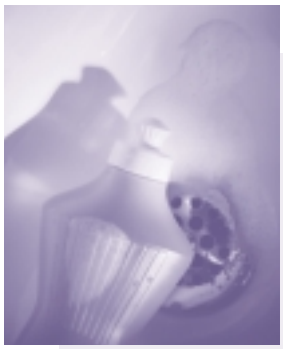
  During the first 6 months of 2000, the city also evaluated more than 1,000 of its chemical purchases in 21 different categories. These evaluations were entered into a database that will soon be accessible to all city purchasers online. Based on the Hazardous Materials Identification System (HMIS) approach, the city assigns a score from 0 (safe) to 4 (hazardous). The system generally reports scores up to 2 as "green," meaning they are safe to

purchase; 3 as "yellow," meaning alternatives should be considered; and 4 as "red," meaning the chemical should be avoided if possible. City officials surveyed departmental purchasing practices and determined the system is reducing hazardous chemical purchases.

- Concerned about potentially hazardous, routine purchases, **Washtenaw County, Michigan**, is compiling a list of products to avoid. The county is examining products such as bleach, liquid correction fluid, and some pesticides and herbicides. No final decisions have been made yet, but the county understands its purchasing decisions have important environmental impacts and is seeking to minimize these impacts.
- **Oakland, California**, passed an antidioxin resolution in February 1999. As mandated in the resolution, the city began seeking "less-toxic, non-chlorinated, sustainable alternative products and processes." Shortly after passing the resolution, the city added chlorine-free and "non-dioxin producing" specifications into its paper contracts. Oakland also reviewed its purchases of products containing polyvinyl chloride (PVC), a plastic resin that produces dioxin as part of the manufacturing process. The city identified two significant PVC purchases—traffic cones and plastic water and electrical pipes. The city has been unable to locate cost-effective traffic cone replacements, but has replaced its PVC piping purchases with a plastic piping made from high-density polyethylene (HDPE), an alternative plastic not associated with dioxin emissions.
- As part of **Vermont**'s "Clean State Initiative," the state tries to purchase chlorine-free products. As directed by the governor in 1996, the state only uses process chlorine-free copy paper for state business.

Cleaning Products and Services

Traditional cleaning products present several human health and environmental concerns. They can contain chemicals associated with cancer, reproductive disorders, respiratory ailments, eye or skin irritation, and other human health issues. They also can include ozone-depleting substances, toxic materials that adversely affect plant and animal life, and chemicals that can accumulate in the environment with potentially harmful consequences. Green Seal, a nonprofit environmental standards organization, estimates that cleaning products contribute approximately 8 percent of total nonvehicular VOC emissions. These emissions contribute to smog formation, degrade plant growth, and can cause respiratory distress in some individuals.



Additional Cleaning Product Information

The following information is accessible via the EPP Web site at **www.epa.gov/oppt/epp/cleaners/resource.htm**:

- An extensive list of EPP cleaning product resources, including information prepared by **Massachusetts**; **Minnesota**; **Santa Monica, California**; **King County, Washington**; and a variety of other governmental and nongovernmental sources.
- A list of environmental attributes some state and local governments consider when selecting cleaning products.
- Yellowstone National Park's list of cleaning product chemicals and ingredients to avoid.

The EPP Web site contains a searchable database of environmental information for products and services. It outlines product-specific information (e.g., environmental standards and guidelines or contract language) developed by government programs, both domestic and international, as well as third parties at **www.epa.gov/oppt/epp/database.htm**.

Several purchasers have noted that green cleaning products' lower VOC content and reduced toxicity help improve overall indoor air quality. This affects all employees, not just janitorial staff. It could also have considerable impacts on employee productivity, absenteeism, and the general well-being of building occupants. Some studies have suggested that improving indoor air quality can increase overall productivity by more than 8 percent. Because labor costs are typically the largest expense for most state and local governments, small productivity increases can result in substantial savings.

- **Santa Monica, California**, was one of the first governments in the United States to apply EPP criteria to its cleaning product purchases. In 1993, the city developed environmental criteria for janitorial products as the first phase of its Toxic Use Reduction Program. The results of a pilot project contributed to the development of bid specifications, which included environmental and public health criteria, as well as performance and cost criteria. Recognizing that EPP is an ongoing process, Santa Monica updated its bid specifications in 1998. This allowed the city to better measure the overall worker health and environmental impacts associated with cleaning product use. The city now analyzes 18 product attributes based on pass/fail and relative ranking criteria. Under the mandatory criteria, the city prohibits carcinogens, aerosols, ozone-depleting chemicals, and Toxic Release Inventory chemicals. It also established strict standards for VOCs and biodegradability. Other considerations such as dyes, fragrances, product packaging, and aquatic toxicity are evaluated on a relative point scale.
- In 1996, **King County, Washington**, established a contract for cleaning products it considers environmentally preferable. The contract prohibits cleaning products containing known or suspected carcinogens and other specific chemicals (e.g., ethylene chloride, chlorinated solvents, and butyl

cleaners). The contract also includes aquatic toxicity limitations and requires nonirritating and biodegradable products. Despite this effort's success, the county considers it only a first step toward finding and evaluating less toxic cleaners. It continues to identify and test potential environmentally preferable cleaners as they are introduced.

Green Cleaning Product Successes

- **Santa Monica, California**, estimates that its green cleaning product purchases have eliminated 3,200 pounds of hazardous materials annually and saved the city approximately 5 percent on annual cleaning product expenses.
- **Richmond, California**, anticipates that its green cleaning purchases will eliminate 3,000 pounds of hazardous materials a year, reduce janitorial worker compensation claims, and improve city employee productivity.

- **Massachusetts** selected five cleaning product lines as environmentally preferable in 1998. Building upon the work of Santa Monica and others, the contract specifications included mandatory requirements banning carcinogens and ozone-depleting chemicals and established strict VOC and phosphate limits. Products not meeting the mandatory criteria were disqualified from further consideration. In addition, companies were awarded additional consideration for voluntary environmental performance criteria using a point system similar to the one described in the Best Value Purchasing section beginning on page 14. Additional points were awarded for environmental benefits such as reduced skin and eye irritability, biodegradability, further reductions in VOC levels, neutral pH levels, and reduced packaging. Products failing to earn at least 50 of the 75 possible environmental attribute points were disqualified from further consideration.

- Like Massachusetts, **Minnesota** began searching for environmentally preferable cleaning products by reviewing Santa Monica's efforts. It developed criteria for evaluating products based on its own priorities, including protecting human health and safety, avoiding ecological stressors, reducing product packaging, and avoiding fragrances and dyes. Products that avoided toxic, carcinogenic, flammable, or irritating chemicals; phosphates; and ozone-depleting substances scored higher in the state's evaluations. In addition, Minnesota evaluated product ingredients using the Minnesota Air Toxics Index System, which assigns hazard ratings based on toxicity data and exposure scenarios.[11] After reviewing nearly 400 products from 23 vendors, the state decided to purchase 33 categories of cleaning products, including all-purpose cleaners, deodorizers, disinfectants, furniture and glass cleaners, and soaps.

- **Vermont** is also buying cleaning products based on an extensive evaluation of their environmental attributes. The state evaluates the presence of carcinogens, acute and aquatic toxicity, likelihood of exposure, biodegradability, VOC content, petroleum versus biobased content, recycled content and recyclable packaging, and bulk packaging, among other environmental considerations.

[11] For additional information on Minnesota's Air Toxics Index System, including a link to the spreadsheet containting the hazard rating system, visit **www.pca.state.mn.us/air/airtoxics.html**.

- Janitorial contractors in **Richmond, California**, expect the switch to green cleaners to reduce worker compensation claims. According to a study conducted by a consultant to the city, it costs an average of $615, excluding long-term disability costs, for each cleaning chemical accident requiring medical treatment. The study revealed that 1 out of every 100 janitors had reported work-related injuries attributable to the cleaning products used. The project team thinks the actual number is 6 injuries per 100 janitors, reasoning that many people are reluctant to report injuries because of a fear of disciplinary measures.

  By switching to less toxic cleaning products, Richmond contractors expect to reduce the number, severity, and cost of accidents. Contractors anticipate worker compensation insurance costs might decrease because insurance premiums are based on the number and severity of claims. In addition, if contractors make all potential product changes available to them, their use of hazardous materials will decrease by 3,000 pounds per year.

- In October 1999, **Multnomah County, Oregon**, issued a request for proposal (RFP) seeking custodial services for eight county health facilities. The RFP included requests for nonsolvent-based, unscented floor wax; nonsolvent-based degreasers; nonacidic and nonalkaline toilet bowl cleaners; water-based stainless steel polish; nonalcohol-based and ammonia-free window cleaners; and nonsolvent-based, nonacidic, and nonalkaline liquid cleansers. It also included a generic statement encouraging use of recyclable products to the maximum extent feasible economically.

- As mentioned previously, **Pennsylvania** purchases cleaning products based on specifications developed by Green Seal (see page 17).

- **Washington** recently awarded a cleaning contract containing nine mandatory EPP criteria. It was based on criteria used by **Minnesota**; **Massachusetts**; **Santa Monica, California**; and **King County, Washington**.

- In March 1999, **Chatham County, North Carolina**, passed an Environmental Leadership Policy that included specific language on the use of green cleaning products and integrated pest management by the county's Buildings and Grounds Department. The policy requires the department to purchase products that are "less or non-toxic and [to] take into account the following:

  a. Have the fewest adverse health effects such as skin, eye, nose, throat, and lung irritation from toxic compounds.

  b. Contain the fewest chemicals that can enter the food chain when consumed by aquatic plants and animals.

  c. Contain the fewest volatile organic compounds (VOCs) that can escape during product use.

  d. Avoid unnecessary additives such as fragrances and dyes.

  e. Reduce product packaging and use recovered materials when packaging is necessary. Buy more concentrated products that have lower packaging and shipping costs, lower cost per application costs, and less waste

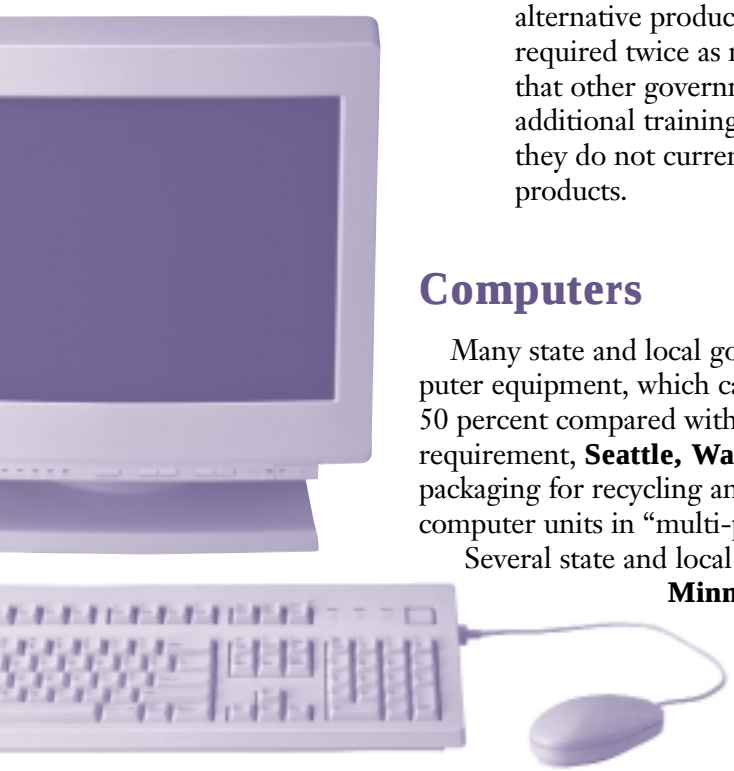
to recycle or dispose of. When using concentrates, the products should be packaged so that the user is not placed at a great risk for exposure."

- The **Indiana** Department of Administration is investigating biodegradable cleaning products and is currently preparing specifications and drafting a purchasing agreement. An award is expected in February 2001. **Seattle, Washington**, and **Kansas City** and **Jackson County, Missouri**, are also investigating green cleaning products. Each is examining the criteria used by others.

Although a significant number of state and local governments are successfully purchasing or exploring purchases of green cleaning products, not everyone has reported complete success.

- **Kalamazoo County, Michigan**, used low-toxicity cleaning products in a juvenile home facility. Anecdotal evidence suggests the residents experienced fewer respiratory incidents following the change in cleaning products. The county's purchasing officials, however, found the purchasing process particularly challenging because it was difficult to identify products as environmentally preferable. The staff chemists had great difficulty determining toxicity based on MSDS information.[12]

- **Olmsted County, Minnesota**, conducted a pilot project using a variety of less toxic cleaning materials from several vendors in the county's largest office building. The effort raised awareness of EPP, but ultimately the county continued using traditional cleaning products because its custodians were more comfortable with them. Custodians reported that some of the alternative products did not perform as well, took longer to work, or required twice as much of the product to work. County officials recognize that other governments are using the products successfully. They believe additional training might have alleviated some performance concerns, but they do not currently plan to resume efforts to purchase green cleaning products.



Computers

Many state and local governments are purchasing Energy Star®-compliant computer equipment, which can reduce energy consumption and expenses more than 50 percent compared with traditional equipment. In addition to the Energy Star® requirement, **Seattle, Washington,** requires vendors to take back all computer packaging for recycling and has asked the contractor to explore shipping multiple computer units in "multi-paks" instead of packaging each individual computer.

Several state and local governments are preparing to follow **Massachusetts** and **Minnesota's** lead and develop contracts for proper disposal of computer equipment. This will ensure that lead, mercury, and other hazardous or toxic materials are disposed of properly.

[12] The source for this information was unsure when Kalmazoo County, Michigan, explored these cleaning products or whether purchasers contacted state and local governments with successful green cleaning programs prior to their attempt.

Massachusetts, however, has gone a step further in evaluating the environmental preferability of its computer purchases. Bidders on recent computer contracts could score higher on the Commonwealth's product evaluation scorecard by meeting the following environmental attributes:

1. Components that were not manufactured or assembled using the following ingredients:
    i. Chloroflurocarbon or hydrochloroflurocarbon compounds identified in the Montreal Protocol.
    ii. Chlorinated solvents.
    iii. Cadmium in the monitor, electronic components, batteries, photo semiconductors, packaging, or packaging ink.
    iv. Mercury in the background lighting system, batteries, or other electronic components.
    v. Selenium, unless the equipment can be returned to the manufacturer.
    vi. Flame retardant materials in any plastic components containing any organically bound chlorine or bromide.
2. Recycled content in the following:
    i. Plastic components such as the central processing unit, monitor housing, and/or keyboard.
    ii. Monitor glass.
    iii. Other.
3. Packaging
    i. Recycled-content packaging.
    ii. Minimizes or eliminates use of polystyrene or other difficult to recycle materials.
    iii. Minimizes or eliminates use of disposable containers such as cardboard boxes.
    iv. Provides a return program where packaging can be returned for recycling.
    v. Manuals printed on recycled-content papers.
4. Upgradability
    i. Modular design that can be upgraded without special tools.
    ii. Expandable memory.
5. Design for recycling
    i. Use of single plastic resin.
    ii. Clear and visible labeling of plastic resins.
    iii. Avoiding use of metallization in plastic housings.
    iv. Easily disassembled.

6. Take-back provisions
    i. Bidders should have methods allowing for the return of used equipment to the original manufacturer at no cost to Massachusetts.
7. Worker health and safety
    i. Ergonomic design, including reduced eye strain.
    ii. Monitors that reduce exposure to magnetic and electrical fields and X-ray radiation.
8. Third-party certification
    i. Points for certification by organizations such as TCO, Blue Angel, ISO 14000.
9. Other environmental issues
    i. Toxics use reduction.
    ii. Natural resource conservation.

Green Buildings

Conventional U.S. office buildings consume 40 percent of total energy flows, generate one-third of the carbon dioxide emissions, and are responsible for 17 percent of the country's water consumption. The country's construction and demolition debris occupies 40 percent of the nation's landfill space. In addition, many traditional construction materials off-gas chemicals that contribute to poor indoor air quality, contributing to what is known as "sick building syndrome." EPA estimates that sick building syndrome costs the nation nearly $60 billion in illnesses and lost productivity each year. Avoiding building materials that are high in VOCs, chemical irritants, or other indoor air quality contaminants can eliminate many indoor air concerns. This requires carefully reviewing caulks, adhesives, sealants, stains, paints, carpets, flooring materials, wall coverings, furniture, and other materials for the presence of potential indoor air contaminants.

Many state and local governments recognize that constructing new buildings and refurbishing existing buildings present numerous opportunities to incorporate EPP practices. In fact, some of the most significant advances in understanding and applying EPP principles are originating in the green building arena.

- In 1999, **Pennsylvania** established its green building specifications in the "Commonwealth's Guidelines for Creating High Performance Green Buildings." Numerous construction projects throughout the Commonwealth already used the guidelines and specifications, including an award-winning office building for the Department of Environmental Protection and an office building for Commonwealth employees, both located in the capital. A 48,000-square-foot classroom building at Shippensburg University is being renovated using the green principles. Copies of the

Commonwealth's guidelines are available online at **www.gggc.state.pa.us/Greenbldg/greenpdf/highperf.htm**.

- **Santa Monica, California**, is incorporating green building principles into a variety of new construction and renovation projects. A four-story, 115,000-square-foot public safety facility adjacent to city hall, for example, is being built with photovoltaic panels, highly energy efficient lighting and HVAC systems, occupancy sensors to turn off lights in unoccupied rooms, recycled-content and low-VOC building materials, and a dual plumbing system that will allow the use of reclaimed water to flush toilets. The building was designed to be 45 to 50 percent more energy efficient than California Title 24's energy efficiency requirements. The city's Engineering Division is currently compiling a database of environmentally preferable building materials used on this and other current and future green building projects in Santa Monica.

- **King County, Washington**, built two new buildings in 1998 that made extensive use of recycled-content materials and other materials the county considers environmentally preferable. Both buildings included low-VOC and formaldehyde-free products, as well as energy- and water-efficient products. One of the buildings, a 327,000-square-foot, eight-story office building in downtown Seattle, contains 32,000 square yards of reused, renewed carpet tiles—the largest installation on the West Coast. It also has an onsite water reclamation system that collects storm-water runoff and ground water, used for flushing toilets. This system is saving an estimated 1.4 million gallons of water annually.

- Both the city hall and civic center in **Seattle, Washington**, are being constructed using green building features. Seattle's definition of green building includes everything that goes into the structure, all the way down to the furniture. The city requires all of its remodels and renovations to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) silver rating.[13]

- **San Diego, California**, renovated a three-story, 73,000-square-foot office building for its Environmental Services Division using green building principles. With healthy indoor air quality a primary goal, the renovation emphasized careful material selection, a new mechanical system, environmental construction methods, and a healthy building maintenance plan. The city is expecting higher employee productivity because of reduced absenteeism related to healthier working conditions.

  Built at a cost of $37 per square foot, which is only slightly more expensive than the area's typical renovation costs, the building includes advanced energy efficiency features. These features reduce the building's energy consumption by 62 percent, saving the city more than $80,000 in annual energy expenses. Energy efficiency features include a super-efficient heating, ventilation, and air-conditioning system; energy-efficient T-8 fluorescent lamps; room occupancy sensors; daylight sensors; and extensive use of natural light. The building's energy consumption is carefully moni-

[13] For additional information on LEED, visit the U.S. Green Building Council's Web site at **www.usgbc.org**.

tored with a direct digital control system that automatically adjusts lighting and temperature.

The city prevented many indoor air quality problems, including chemical emissions from new materials and furnishings that combine to produce a "new building smell." To avoid IAQ concerns and to incorporate other important environmental considerations, the city adopted the following construction material selection criteria:

- Minimal chemical emissions (especially VOCs).
- Avoid carcinogens and toxins.
- Recycled-content materials.
- Recyclable materials.
- Recycling as part of the manufacturing process.
- Increased product durability.
- Use of sustainable and renewable resources.
- Products that inhibit biological contaminants without causing indoor air quality concerns.
- Materials that do not need cleaning or maintaining with harsh chemicals.
- Preference for locally available building materials.
- Reasonable cost.

- The **San Diego County, California**, Board of Supervisors passed a policy affirming its interest in a sustainable building program. The policy emphasizes occupant health, energy and transportation efficiency, and resource and material conservation, as well as reuse and recycling during building construction, operation, and demolition. It also established an Innovative Building Review Committee that advocates and provides incentives for complying with voluntary standards established by the board of supervisors. Excerpts from the voluntary standards include:

  1. Projects should use resources and methods that minimize pollution and waste, and do not cause permanent damage to the earth, including erosion.
  2. Buildings should be designed to take maximum advantage of natural sources of heat, cooling, ventilation, and light.
  3. Projects should include innovative strategies and technologies to conserve water, reduce effluent and runoff, and recharge the water table.
  4. Projects should be planned to incorporate public transportation and reduce the need for automobiles.
  5. Buildings should be constructed and operated using materials, methods, and mechanical and electrical systems that ensure healthy indoor air

quality while preventing contamination by carcinogens, volatile organic compounds, fungi, molds, bacteria, and other known toxins.

6. Projects should be planned to minimize waste through the use of innovative methods such as lifecycle analysis, and preferences given to: a) reuse or the highest practical recycled content; b) raw materials derived from sustainable or renewable sources; c) materials and products ensuring long life/durability and recyclability; d) materials requiring the minimum of energy and rare resources to produce and use; and e) materials requiring the least amount of energy to transport to the job site.
7. Mechanical and electrical systems should be designed and constructed to achieve the maximum energy efficiency achievable with current technology.

Representative Building Materials For The San Diego Environmental Services Department Renovation

- **Low-VOC paints, sealers, and stains**—All met California requirements for low-VOC coatings and contained no formaldehyde, petroleum-based solvents, or other toxins.
- **Acoustic ceiling tiles**—Pearlite content with no VOC emissions and no artificial mineral fibers. They also are naturally nonflammable and antimicrobial and contain 10 percent recycled content.
- **Carpet tiles**—Met the state of Washington Indoor Air Quality Specifications for low-VOC products, including a low-VOC adhesive for installation.
- **Linoleum flooring**—Linoleum is made from natural fibers and has minimal VOCs (unlike vinyl flooring).
- **Cabinetry fiberboard**—Manufactured from 90 percent preconsumer recycled wood without using formaldehyde. Cabinets are coated with a low-VOC coating instead of a laminate.
- **Ceramic tiles**—Use glass and clay as the primary materials, which makes them naturally inert with no VOC emissions. The glass tiles contain 70 percent recycled content.
- **Cellulose insulation**—Manufactured without formaldehyde from 100 percent recycled-content soy-ink newspapers. Contains no artificial mineral fibers such as fiberglass.
- **Gypsum wallboard**—Available with 100 percent recycled-content facing and no VOC emissions.
- **Low-flow plumbing fixtures**—Reduce building water consumption by 50 percent.
- **Steel framing**—Requires no chemical fire retardants or sealants and contains 50 percent recycled content.
- **Counter tops**—Solid surface acrylic polymer manufactured without formaldehyde.
- **Toilet partitions**—Recycled-content HDPE plastic manufactured without formaldehyde.

8. Creative design and innovative energy sources and uses shall be encouraged to reduce the consumption of energy from nonrenewable sources. A deliberate effort shall be made to convert to renewable energy sources to the extent that such options are feasible.

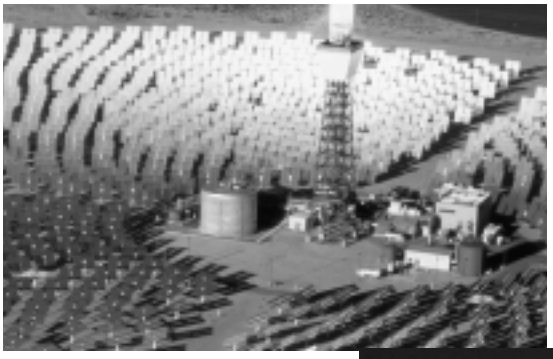
9. Energy efficiency measures should be selected to achieve energy consumption at 50 percent below California's current Title 24 standards, with a target maximum payback period of 5 years.

Green Building Leases

Recognizing that its building-related environmental impacts include buildings leased and owned by the state, **Minnesota**'s Real Estate Management Group began incorporating an environmental clause into its building leases in 1999. The language currently reads as follows:

"LESSOR shall use its best efforts to employ practices that protect occupants' health and ensure conservation of natural resources in the operation and maintenance of the building and the Leased Premises."

Minnesota also is working with state agencies to incorporate recycled-content and/or low-VOC products into the building spaces they lease. The state hopes to expand its current green lease language in the near future and is examining green lease language used by EPA in its leased facilities.[14]



Green Power

According to EPA, the U.S. electric power industry produced 1.1 billion pounds of toxic emissions in 1998, or 15 percent of all U.S. toxic emissions. In addition to toxicity concerns, many electricity sources produce greenhouse gas emissions, which are believed to have potentially adverse impacts on the global climate. In 1994, for example, 36 percent of U.S. carbon dioxide emissions were attributed to the utility industry versus 30 percent for transportation, 23 percent for industrial facilities, 7 percent for residential households, and 4 percent for commercial operations.

Most electricity in the United States is generated from fossil fuels (e.g., coal, oil, natural gas), large hydroelectric dams, or nuclear energy. Each presents unique environmental concerns. Most of the toxic and greenhouse gas emissions are produced by burning fossil fuels. Large hydroelectric dams—those pro-

[14] Additional information on EPA's Green Lease Riders is available on the EPP Web site at **www.epa.gov/oppt/epp/ppg/case/region3.htm** and **ww.epa.gov/oppt/epp/ppg/case/region7.htm**.

ducing more than 30 megawatts of power— permanently alter entire river ecosystems. Nuclear power plants have produced 70,000 tons of high-level radioactive waste with such a long half-life that it must be safely stored for at least 10,000 years and up to 240,000 years. At the time this report was published, no permanent storage facility was available for the radioactive waste.

"Green" power, which is derived from renewable resources with minimal adverse environmental impacts or risks, has the potential to displace these forms of electrical generation, significantly reducing pollution, decreasing reliance on limited natural resources, and avoiding other environmental risks. **King County, Washington**, has investigated generating its own renewable power for use at county facilities. The county was investigating use of a molten carbonate fuel cell technology, which was to be powered by methane gas and carbon dioxide generated at the wastewater treatment facility. Unfortunately, the company the county was working with ceased operations. The county, however, remains interested in evaluating the efficiency and environmental benefits of fuel cells, which a number of other U.S. companies have successfully designed, built, installed and operated.

Recent deregulation in the U.S. electric industry provides alternatives to creating local, government-owned, electricity generating capacity. It allows consumers in some states to choose their electricity supplier in a way similar to choosing a

Defining "Green" Power

There are a growing number of competing "green" power definitions. Some definitions consider electricity green if at least 1 percent is generated from renewable energy sources; others do not consider it green power unless 100 percent of the electricity is generated from renewable sources. Some definitions include any energy source that does not generate air pollution. This definition, however, includes energy generated by nuclear plants or large-scale hydroelectric plants, which are energy sources specifically excluded from other definitions of green power.

EPA, in several of its recent green power purchases, defined green power as renewable energy generated by any of the following sources:

- **Biomass** generates electricity by burning waste wood, other plant materials, or the gas emitted when waste decomposes in landfills.
- **Geothermal** produces electricity using the heat of the Earth's core or solar energy trapped by the Earth's crust.
- **Small hydroelectric** projects (30 megawatts or less) generate electricity from running water without requiring large dams that adversely affect local communities and wildlife.
- **Solar** power produces electricity from the sun.
- **Ocean-based** sources of electricity are generated from the constant motion of waves or variations in ocean temperature.
- **Wind** generates electricity by powering windmills.

long-distance telephone company. This provides consumers with opportunities to evaluate their electricity providers' environmental impacts when making purchasing decisions.

At the time this report was published, green power suppliers were only active in the deregulated California, Pennsylvania, and Illinois electric utility markets, but state and local governments were already taking advantage of opportunities to significantly reduce their environmental impacts by purchasing green power.

- In June 1999, **Santa Monica, California**, became the first U.S. municipality to purchase 100 percent renewable electricity for its facilities. It buys approximately five megawatts of electricity produced by geothermal plants, which generate electricity from the heat of the earth's crust. Based on its 1998 energy consumption, the city expects the switch to reduce greenhouse gas emissions by 13,672 tons, NOx emissions by 16.2 tons, and SOx emissions by 14.6 tons annually.
- **Pennsylvania**'s Department of General Services began purchasing green electricity in January 2000. Pennsylvania's Department of Corrections; Capital Complex buildings in Harrisburg; office buildings in Pittsburgh, Scranton, and Reading; and 14 universities are all receiving a portion of their electricity from green sources. The Commonwealth agreed to purchase 37,500 megawatt hours of green electricity in 2000, which represents 5 percent of its electricity purchases.
- In March 2000, **Santa Barbara, California**, began buying 100 percent certified renewable power for city facilities.
- **Oakland, California**, also recently announced it would begin buying renewable power. On June 20, 2000, a resolution formalized the purchase of green power for all municipal facilities—city hall, administration buildings, and street and traffic lights. The $4 million annual purchase of approximately nine megawatts of electricity is equivalent to the electricity purchased by 27,000 average homes.
- **Chicago, Illinois**, and 47 other nearby government bodies announced in July 2000 that they would begin buying 400 megawatts of electricity as a group. Eighty megawatts must be from clean, renewable resources such as solar or wind energy. The renewable energy purchase will help reduce the region's reliance on coal-fired plants, which officials believe will improve regional air quality.

Integrated Pest Management

Every year in the United States, more than 4.5 billion pounds of chemicals are used to control unwanted insects, rodents, and weeds. To minimize the environmental impacts associated with use of these chemicals, purchasers are investigating alternatives they consider environmentally preferable. Integrated pest management (IPM) is an increasingly popular approach that combines employee education, physical traps and barriers, and limited applications of less-toxic chemicals. Several state and local governments, including **Connecticut**; **Massachusetts**; **Cape May County, New Jersey**; **Chatham County, North Carolina**; **Kansas City,**

Missouri; **King County, Washington**; **Portland, Oregon**; **Santa Monica, California**; and **Seattle, Washington**, are exploring or practicing IPM. Santa Monica, for example, drastically reduced its pesticide use, continued eliminating pests, and reduced the cost of pest control services by 30 percent. Cape May County saved $45,000 between 1993 and 1998 by adopting an IPM approach.

In response to an executive order signed by the governor, **Massachusetts** developed a statewide IPM contract. More than 20 vendors have conducted onsite visits and prepared detailed IPM plans to demonstrate proficiency and to qualify as IPM providers under the contract.

San Francisco, California, also has a very aggressive IPM program. Concerned about potential pesticide and herbicide runoff into the San Francisco Bay, the city's board of supervisors passed an IPM ordinance in October 1996 that immediately banned use of the most toxic pesticides and pesticides linked to cancer and reproductive harm. It established an IPM approach led by a full-time, citywide IPM coordinator who is assisted by coordinators in the seven city departments traditionally using the greatest volume of pesticides. It also initiated development of an approved product list that was released, as mandated by the board of supervisors, on January 1, 2000. Products not appearing on the list cannot be used without a one-time exception approved by the citywide IPM coordinator. The current list of approved pesticides is available at **www.sfenvironment.com**.

When developing the list, the city considered information about each chemical's known and suspected effects as an endocrine disruptor,[15] a carcinogen, and a contributor to reproductive disorders. It also examined toxic effects on humans, aquatic organisms, wildlife, domestic animals, birds, bees, and potential impacts on water quality due to runoff potential.

At the time this report was published, San Francisco's list included 75 products approved for use by city employees and contractors. Each product is listed along with information about the pesticide type (aquatic, fungicide, insecticide, herbicide, slug, vertebrate), use category (allowed, limited, special concern), hazard tier (less hazardous to more hazardous), product name active ingredients, EPA registration number, and use limitations.

While the approved products list is an important component of the city's IPM practices, the most significant effects are the result of decreased pesticide and herbicide uses. The city has used a variety of alternatives to chemical application. To control weeds, the city successfully tried physical removal (by hand or mechanical means), green flamers (propane torches that heat, steam, and kill weeds), corn gluten meal, and use of wood chips, mulch, and other barriers.

Defining Integrated Pest Management

According to Section 39.2 of the San Francisco Administrative Code, integrated pest management means "a pest management method that combines biological, cultural, physical, and chemical tools to minimize health, environmental, and financial risks. The method uses extensive knowledge about pests, such as infestation thresholds, life histories, environmental requirements, and natural enemies, to complement and facilitate biological and other natural control of pests. The method uses the least toxic synthetic pesticides only as a last resort to controlling pests."

[15] Endocrine disruptors are chemicals capable of interfering with the naturally produced hormones that guide development, growth, reproduction, and behavior in humans and animals. For additional information, visit **www.epa.gov/pesticides/citizens/3file.htm.**

Demonstrating its resolve to employ alternatives to chemical herbicides even in difficult situations, the city hired a goat tender and a herd of 340 goats to successfully control poison oak growth on a steep mountainside slope. The city's Recreation and Parks Department, which is responsible for 200 facilities covering 3,000 acres, was formerly the city's largest chemical user. The department has reduced its pesticide use by 60 percent and eliminated the use of organophosphates and other highly toxic pesticides.

For Additional Information

For more about IPM, visit **www.epa.gov/region09/toxic/pest/school/**.

According to one Recreation and Parks representative, while pesticide use has decreased dramatically, complaints of carpal tunnel syndrome and other injuries related to physical activity have increased because of the change. There is also concern that the department is being asked to "do more" without a corresponding increase in funding. The representative says some city employees are unhappy about "seeing a few weeds where there were formerly none." He did acknowledge, however, the importance of the environmental benefits.

In addition to decreasing outdoor pesticide use, the city replaced spray pesticide applications inside public buildings with baits and traps. It further reduced pesticide use by teaching employees how proper sanitary and food storage habits attract fewer pests. The city also carefully tracks all pesticide applications by recording which products are used, in what quantities, and with what degree of success. Before adopting the citywide IPM program, building managers frequently were unaware of which chemicals were applied or for what purpose. Now each facility has a site manager responsible for tracking the information.

To further facilitate decreases in chemical use, the city holds monthly Technical Advisory Committee meetings and an annual IPM conference. Attended by IPM coordinators and other interested parties, the meetings allow city agencies to share information and coordinate citywide approaches to new challenges.

Paint

Recycled-content paint—paint collected at household hazardous waste collection points, then reblended, filtered, and sold in a wide variety of colors—is an excellent use for excess paint that otherwise might be incinerated, landfilled, or disposed of improperly. EPA's CPG program designated recycled-content latex paint in accordance with RCRA requirements in 1997. This designation means federal agencies and state and local governments using federal funds are required under RCRA to buy recycled-content paint as needed if the cost is reasonable, adequate competition is available, it is reasonably available, and it meets reasonable performance specifications. As a result of EPA's designation and the desire to eliminate paint from the waste stream, several state and local governments are purchasing recycled-content paint.

Federal agencies and state and local governments are beginning to look beyond recycled content to examine other environmental attributes associated with paint purchases, such as VOC and heavy metal content. In some instances, the require-

ment to buy recycled and the desire to minimize other adverse environmental impacts are not always complementary objectives given the limited availability of low-VOC recycled-content paints.[16] A few of the state and local governments looking beyond recycled content when purchasing paint include the following:

- **Vermont** tried using recycled-content paint in a variety of applications, but had very poor results. It was used to paint a city director's office, for example, and the smell was overpowering. Because of the complaints and concerns about the smell, the state no longer purchases recycled-content paint and instead focuses on low- or zero-VOC paint and other environmental attributes such as zero heavy metal content. When the state issued a contract for paints meeting its low-VOC standard, more than half a dozen vendors submitted compliant bids at very competitive prices.
- **Washington** currently has a contract for recycled-content paint, but is strongly considering incorporating a wider variety of environmental criteria such as VOC, heavy metal, and hazardous constituent content into future paint contracts.
- **North Carolina** is investigating low-VOC paints because it can significantly reduce emissions associated with smog formation and lung irritation.
- The **Cincinnati, Ohio**, Department of Public Works' Highway Maintenance Division and the Office of Environmental Management worked together in 1994 to successfully convert from solvent-based paints to water-based paints for highway lines. The paint used for highway lines had to be capable of enduring the wear-and-tear imposed by traffic and severe weather. The water-based paint also met Cincinnati's public safety standards for performance and durability, thus no sacrifices were made to gain the environmental improvements.

  The selected water-based paints meet both performance and environmental goals; the paints no longer contain lead, cadmium, or other heavy metals, and they significantly reduce VOC emissions. Residual paint no longer has to be handled, transported, or disposed of as hazardous waste. The switch also eliminated harmful cleaning solvents and resulting hazardous waste generated from the cleaning process.

  The conversion completely eliminated toxic materials use and the generation of hazardous waste from line painting operations. Based on an estimated annual use of 22,000 gallons of line stripe paint, the switch will eliminate approximately 33,000 pounds of lead and 36,000 pounds of VOCs from Cincinnati's environment yearly.

For Additional Information

To find out more about selecting environmentally preferable paints, download a copy of EPA's *Painting the Town Green* (EPA742-R-99-005) case study at **www.epa.gov/oppt/epp/ pdfs/paint.pdf**, or call EPA's Pollution Prevention Information Clearinghouse at 202 260-1023.

[16] Low-VOC recycled-content paint is not widely available because the chemical content of recycled paint is dependent upon the chemical content of its older feedstock paint. Even the lowest VOC recycled paint contains significantly higher VOC levels than the extremely low-VOC, virgin-content paints widely available.

Paper and Paper Products

Of all state and local government purchases, paper appears the most likely to be centralized and available on governmentwide contracts because of the large paper volumes used as part of routine governmental operations. Paper is also one of the most visible ways of demonstrating an environmental ethic because it is the most prolific means for state and local governments to communicate with the public. As a result, many state and local governments use recycled-content paper and note that fact on the bottom of their printed publications. Some state and local governments are examining additional environmental impacts associated with paper purchases, including chlorine-free, "tree-free," and undyed paper.

- **Pennsylvania** stopped purchasing its traditional "goldenrod" yellow envelopes because the colored inks made them less suitable for recycling. Avoiding the yellow dye in the production process also reduces the environmental impacts associated with artificial dyes.

- Because of increasing demand, **Ohio**'s Department of Administrative Services (DAS) added a tree-free paper made from seaweed to the state paper contracts to make the purchasing process easier. At $7.46 per ream, it is three times more expensive than the traditional recycled-content paper the state routinely purchases. State officials think, however, the additional cost is primarily related to the small quantities currently being purchased and manufactured.

  Ohio DAS has purchased a variety of tree-free papers for the state's Department of Natural Resources and the Expo Agency, which coordinates the annual state fair. Some of the tree-free papers available through Ohio DAS include paper made from old U.S. currency, denim, banana skins, tobacco leaves, and coffee bean shells.

- Following adoption of a 1999 antidioxin resolution in **Oakland, California**, the city's Purchasing Division revised specifications to require that all paper provided to the city be chlorine free and produce no dioxin during manufacture.

- As directed by its governor in 1996 to support the "Clean State Initiative," **Vermont** uses chlorine-free copy paper for all state business. **Portland, Oregon**, is also buying chlorine-free paper. (See page 7.)

- A **Minnesota** statute encourages the purchase of recycled-content paper manufactured with little or no chlorine bleach or chlorine derivatives. It also promotes the use of soy inks for printing. In January 2000, Minnesota increased efforts to purchase recycled content paper because only 50 percent of Central Store customers were buying recycled. In June 2000, after an aggressive outreach strategy, recycled content paper purchases rose to 85 percent.

- A September 1999 antidioxin ordinance in **San Francisco, California**, asks departments to find products that do not contain and were not manufactured with chlorine or chlorine derivatives. The city is now purchasing approximately 5,000 cases of 100 percent recycled-content, process chlo-

rine free paper per year. This represents about 10 percent of the city's annual paper purchases.

- **Indiana**, as a result of an executive order issued by the governor, is currently promoting the purchase of tree-free and chlorine-free paper. The state also requests that vendors and manufacturers print bids double-sided on 30 percent postconsumer recycled-content paper that is tree-free and chlorine-free. It also requests that bids are printed with soy-based inks when possible.
- All paper purchased by the **Massachusetts** government contains at least 30 percent postconsumer recycled content. Paper containing between 50 and 100 percent postconsumer content and tree-free papers made from kenaf and bamboo are also available under state contract.
- **Washington** is currently investigating the purchase of chlorine-free paper. It is also investigating straw-based paper because of recent restrictions on the burning of agricultural residues.

Vehicles

According to a 1997 report by EPA's National Vehicles and Fuel Emissions Laboratory, every year the average gasoline-powered passenger car generates 606 pounds of carbon monoxide, 80 pounds of hydrocarbons, 41 pounds of nitrogen dioxides, and 10,000 pounds of carbon dioxide. Larger vehicles such as trucks and buses produce even more. In an attempt to minimize these emissions, and in some cases to meet federal Clean Air Act requirements, many state and local governments are purchasing alternative fuel vehicles with significantly lower emissions than their traditional counterparts.

There are a wide variety of alternative fuel vehicles currently available. Some state and local governments consider many of these vehicles environmentally preferable because they significantly reduce emissions when compared with traditional gasoline vehicles. The state and local governments contacted for this study are evaluating a number of alternatively fueled vehicles, including the ones described below.

Biodiesel

In addition to petroleum, diesel can be derived from animal fats, agricultural feedstocks, recycled cooking grease, and soybean, canola, sunflower, and cottonseed oils. Most U.S. biodiesel is derived from soybean oil because of its abundance in the United States. Biodiesel can be used in its pure form (B100) or blended with traditional diesel fuels. The most common blend is B20, which is 20 percent biodiesel and 80 percent petrodiesel. In 1999, the Deer Valley School District in **Phoenix, Arizona**, began using B20 in almost 60 percent of the school district's 250 buses and other vehicles. The school district has not reported any adverse performance issues.

For Additional Information

To learn more about alternative fuel vehicles, visit EPA's Alternative Fuels Program Web site at **www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm** and the U.S. Department of Energy's Alternative Fuel Vehicle Fleet Buyer's Guide at **www.fleets.doe.gov**.

Compressed Natural Gas

More than 85,000 compressed natural gas (CNG) vehicles travel U.S. roads, including one out of every five transit buses. CNG vehicles produce lower exhaust and greenhouse gas emissions than their gasoline- or diesel-powered counterparts. As a result, many state and local governments are using them. The **New York City** Department of Transportation recently committed to converting its entire bus fleet from diesel to natural gas. It has already ordered more than 300 CNG buses, each of which saves more than 10,000 gallons of diesel fuel annually. **Connecticu**t is purchasing 300 automobiles capable of running on either CNG or traditional gasoline. This represents 45 percent of the 670 vehicles the state will purchase in 2000.

Electric and Hybrid-Electric

Many consider electric vehicles environmentally preferable because they have zero tailpipe emissions. After taking power plant emissions into account, which must be considered unless electricity is generated from nonpolluting renewable sources (see page 32), electric vehicles can still remain more than 90 percent cleaner than the cleanest conventional gasoline-powered vehicle. **Massachusetts** owns 37 zero emission electric passenger sedans and pickup trucks in addition to 82 CNG vehicles, including passenger cars and vans, pickup trucks, and one heavy duty vehicle.

Hybrid-electric vehicles use a gasoline- or diesel-powered engine to run an onboard generator that powers the electric motor. This configuration can more than double the gas mileage of a traditional vehicle and eliminates the limited driving range of many electric vehicles.[17] The **New York City** Transit Authority ordered 125 new hybrid-electric buses in January 2000. Each hybrid-electric bus conserves about 6,000 gallons of diesel annually.

Ethanol

Henry Ford's first car ran on ethanol, an alcohol made from corn, potatoes, wood, waste paper, wheat, brewery waste, or other agricultural products. Anything containing sugar, starch, or cellulose can be fermented and distilled into ethanol. In the United States, 90 percent of ethanol is derived from corn because of its abundance. Ethanol is usually mixed with gasoline for use as a fuel. Many communities require the use of "gasohol," a blend of 10 percent ethanol and 90 percent gasoline (E10), during the winter to reduce carbon monoxide emissions. Any automobile can use gasohol, and its use does not void vehicle warranties. For state and local communities interested in significantly lowering emissions year-round, the most popular ethanol blend of is E85, a blend of 85 percent ethanol and 15 percent gasoline. This mixture requires vehicles specially equipped to run efficiently on

[17] Although many people are concerned about electric vehicles' limited driving range, nearly half of all U.S. automobile trips are less than 3 miles, which is well within the 40 to 120-mile range of a fully charged electric vehicle.

high ethanol concentrations. Automobile manufacturers produce a variety of cars, pickup trucks, and minivans that can run on any combination of ethanol and gasoline. These flexible fuel vehicles automatically sense the percentage of alcohol in the fuel tank and adjust the engine's performance accordingly. **Minnesota** has about 500 E85 flexible fuel vehicles and will add another 160 in 2000. In addition to purchasing the vehicles, the state has ensured that the necessary infrastructure is in place. Approximately 50 stations in the state now sell E85.

Propane

Propane is currently the most widely used alternative fuel in the United States with more than 5,000 fueling stations nationwide and more than 350,000 propane-fueled cars and buses on U.S. roads. Auto manufacturers offer a variety of propane-powered vehicles, many of which have two separate fuel systems making them capable of running on either propane or gasoline. Propane-powered vehicles currently get fewer miles per gallon than their gasoline-powered equivalents, but offer significantly lower emissions per mile. The **Texas** Department of Transportation has more than 4,400 propane-powered vehicles.

Miscellaneous

Several other alternative fuels are currently available, including liquified natural gas, fuel cells, and Fischer-Tropsch liquids. Although few of the state and local governments interviewed for this case study mentioned their use, manufacturers of these alternative fuels have test vehicles in numerous state and local government fleets. **Chula Vista, California**, for example, recently purchased a bus powered by a hydrogen fuel cell. According to EPA's Alternative Fuels Program, the bus fleet in **Orange County, California**, is fueled entirely by liquified natural gas.

The table on the following page summarizes the use of alternative fuels by the state and local governments contacted for this study.

Use of Alternative Fuel Vehicles by Locality/State							
	Biodiesel	Compressed Natural Gas	Electric/ Hybrid-Electric	Ethanol	Propane	Hydrogen Fuel Cell	Liquefied Natural Gas
Chattanooga, TN		✓					
Chula-Vista, CA						✓	
Connecticut		✓	✓	✓			
Dayton, OH		✓		✓			
Massachusetts		✓	✓				
Minnesota		✓	✓	✓	✓		
New York		✓	✓				
New York City, NY		✓	✓				
Orange County, CA							✓
Phoenix, AZ	✓	✓					✓
Santa Monica,CA		✓	✓		✓		
Texas					✓		
Washington			✓	✓			
Wisconsin				✓			

Final Observations

This case study provides substantive examples of the many ways EPP efforts in state and local governments have increased and expanded since the publication of *A Study of State and Local Government Procurement Practices that Consider Environmental Performance of Goods and Services* (EPA742-R-96-007) in 1996. Numerous governments have written policies and mandates to create EPP programs, while others have actively expanded their EPP efforts to include more diverse product areas and a wider array of environmental attributes based on their jurisdictions' needs. When evaluating EPP's evolution from 1996 to the present, several observations can be made, as described below.

Several Successful EPP Approaches Exist

Each of the EPP programs described in this report implements environmental purchasing slightly differently. There do, however, seem to be two major distinctions between the various programs—some rely solely on voluntary participation, and others include executive orders, policies, or explicit legislative mandates for environmental purchasing. Some of the most successful EPP programs, such as those found in **King County, Washington**; **Massachusetts**; and **Minnesota,** are strictly voluntary. EPP advocates within each of these programs research and provide environmental product information, then work with individual purchasers to encourage the purchase of environmentally preferable products when available.

Other program contacts, however, believe state and local governments with statutory mandates for green purchasing are more likely to have green purchasing efforts under way. A few commenters suggested that they were only incorporating green purchasing "because they have to," but nevertheless, green purchasing activities are being implemented. Many of these activities, however, only include a single-attribute focus on recycled content or energy efficiency.

Several people interviewed for this study dismissed the importance of green purchasing executive orders and other policy statements. They explained that executive orders and policies do not legally *require* green purchasing activities. More than once, officials in state and local governments with green purchasing-related executive orders or policies in place said there was no real effort to adopt green purchasing because, "It is not required." Others suggested that green purchasing policies might be eliminated with a change in administration, so they chose not to make green purchasing a priority.

Participants from programs in **King County** and **Massachusetts** explained that this attitude reinforces their belief that voluntary programs are the best way to implement EPP. "You can't force someone to do something they don't want to do," one official explained, a view two other officials strongly endorsed. "If they do relent, they won't do it very well without very explicit guidance." All three officials questioned whether the necessary guidance was available yet. "EPP is just still too new for that," a representative from King County suggested.

Strong EPP Advocates Increase Success

Without exception, state and local governments with a strong EPP advocate are more likely to base purchasing decisions on multiple environmental attributes than those without an advocate. When EPP executive orders or policy statements exist, advocates have used them to generate greater momentum for their EPP efforts. Success is even more likely in state and local governments with both a strong EPP advocate and an EPP statute.

Purchasers Are More Likely To Buy Products With Environmental Attributes When They Are Available On State Contracts

Several purchasing officials interviewed for this report mentioned the importance of identifying and placing environmentally preferable products on state contracts. Once products are available on a contract, they are easier for people to buy. Making them easier to buy significantly increases purchasers' willingness to try a product with innovative environmental attributes rather than continuing to purchase a more traditional alternative. An EPP official from Massachusetts suggested that the first step should always be to make innovative products available on state contracts. "Once they are available," he explained, "EPP advocates will have greater success creating a demand for the products."

Numerous EPP Resources Are Available

As more state and local governments investigate EPP, they are learning that others have already faced many of the issues they are confronting. As a result, information is available about the multiple environmental attributes of products such as alternative fuel vehicles, cleaning products, green buildings, green electricity, integrated pest management, paint, and paper. Several state and local communities have posted Web sites describing their EPP processes and the products they are buying. (See Appendix 3 for a brief listing of some of the available resources.)

Introducing and Implementing EPP Takes Time

State and local governments buy a majority of their goods and services through multiyear contracts, so they might have to wait until contracts are up for renewal or renegotiation before incorporating new environmental attributes. EPP also requires introducing a wider variety of people to environmental information about the products and services they buy. Most people are unfamiliar with the specifics of how their purchasing decisions can affect the environment. Climbing this learning curve can take time. EPP cannot truly succeed until all purchasing decision participants, including product or service specifiers, buyers, and vendors, are familiar with the process.

EPP Requires Good Communication and Teamwork

With very few possible exceptions, purchasing is not a one-person responsibility. Many different people and departments request products or services, others are responsible for obtaining them and negotiating the contracts, and still another group is responsible for providing the products or services. Incorporating environmental aspects into this process requires working together to ensure everyone understands which environmental attributes are important and how to evaluate them. Based on this study's results, the most successful way to accomplish this goal is to convene teams of people with the necessary environmental and purchasing expertise. The teams can then collectively examine new purchasing opportunities and determine how to incorporate environmental attributes into future purchases.

EPP Is Expanding

Since EPA originally published *A Study of State and Local Government Procurement Practices that Consider Environmental Performance of Goods and Services* (EPA742-R-96-007) in 1996, numerous state and local governments have implemented EPP activities or expanded "buy green" programs beyond their original buy-recycled focus. Appendix 1 provides an update on the six EPP programs discussed in the 1996 report.

While most programs still emphasize buy-recycled, many also recognize the value of examining multiple environmental attributes. This study supports the notion of EPP as an evolutionary concept, beginning perhaps with recycled-content paper purchases and eventually expanding to numerous products and various environmental attributes. EPA expects the number of EPP programs to continue growing as more state and local governments recognize the local and global environmental impacts of their purchasing decisions and as more information becomes available about the environmental characteristics of products and services.

Appendix 1: Early EPP Pioneers Update

In 1996, EPA published *A Study of State and Local Government Procurement Practices that Consider Environmental Performance of Goods and Services* (EPA742-R-96-007). This study examined the purchasing practices of six states and counties and reached some general conclusions about the success of EPP at state and local levels. Findings suggested that "agencies are mainly interested in recycled content, almost to the exclusion of other issues such as energy efficiency or source reduction." With the exception of **Wisconsin**'s investigations of chlorine-free paper and **Minnesota**'s early alternative fuel vehicle purchases, most purchases were examined only for recycled content.

As the current study demonstrates, EPP has expanded beyond the early emphasis on buy-recycled to encompass a wider variety of environmental impacts. An increasing number of state and local governments are examining multiple environmental impacts associated with their purchases. Many successes highlighted in the current study built on the initial efforts of the earlier pioneers described in the 1996 study. Those pioneers included:

- King County, Washington
- Maine
- Minnesota
- San Diego County, California
- Washington
- Wisconsin

This appendix highlights the evolution and current activities of the six EPP programs highlighted in the original study. In some cases, the effort to buy environmentally preferable goods and services expanded. In other cases, EPP efforts remained static or were de-emphasized.

King County, Washington

King County's EPP program began in 1989, following the county's adoption of its Recycled Products Procurement Policy. This policy included a 15 percent price preference for recycled-content paper and a 10 percent price preference for re-refined motor oil. The county's Recycled Products Procurement Program, located within the Procurement Services Division, established a successful buy-recycled program through a variety of employee training and outreach strategies such as workshops, "field trips," and a newsletter devoted to the topic.

By 1996, when EPA published its first study of state and local government EPP practices, the county had increased its purchase of recycled-content paper from 8

percent to 90 percent. The paper contained between 25 and 35 percent postconsumer recycled content, which was significantly higher than the 10 percent EPA was then promoting.[18] The county also was buying recycled-content concrete aggregate, asphalt, compost, paint, plastic lumber, glass aggregate, and trash can liners, plus re-refined antifreeze and motor oil, remanufactured toner cartridges, and retread tires.

For Additional Information

To find out more about King County's Environmental Purchasing Program, including back issues of the county's EPP newsletter, visit **www.metrokc.gov/procure/green**.

When the 1996 EPA study was released, King County had no immediate plans to incorporate the multiple environmental attributes EPA's EPP program was recommending. Since the initial report was released, and as highlighted in this report, King County's Recycled Products Procurement Program, now known as the Environmental Purchasing Program, has expanded. It now includes advanced energy and water efficiency purchases; low-toxicity cleaning products; renewable energy projects using electricity generated from solar energy and fuel cells; highly resource-efficient, low-toxicity "green" buildings (including one that relies on natural cooling instead of air-conditioning, and another that collects rainwater for flushing toilets); and integrated pest management techniques that drastically reduce chemical use while controlling rodents, insects, and weeds.

The ordinance establishing the county's original EPP program included funding for the Solid Waste Division (SWD) to establish two EPP positions. A few years ago, program funding was removed from the SWD budget because of budget cuts, but the program was so successful that the county established permanent funding in the Purchasing Agency.

The program remains collaborative rather than prescriptive. The county does not require EPP, but its two EPP experts constantly educate county employees about more environmentally preferable alternatives and encourage them to examine these products more closely. The county's Environmental Purchasing Program maintains an extensive Web site and distributes a monthly e-mail newsletter as part of this education effort. The Web site and neswsletter report on a wide variety of topics, including:

- Carpet and carpet recycling
- Environmentally preferable cleaners
- Environmentally preferable purchasing resources
- Flooring
- Green building and sustainability resources
- Pollution prevention resources
- Recycled plastic lumber
- Remanufactured office furniture
- Scrap tires in civil engineering applications

[18] EPA currently recommends agencies purchase paper containing 30 percent postconsumer content.

King County plans to continue expanding its EPP program as environmental attribute information becomes available for additional products. The county also hopes to launch an automated procurement system next year that will reduce paperwork and simplify the purchasing process. When available, it will provide buyers with relevant environmental information to incorporate into their purchasing decisions.

Maine

As reported in EPA's 1996 study, Maine was purchasing a variety of recycled-content products, including paper, tires, plastics, glass, re-refined motor oil, aluminum, toner cartridges, and wiping cloths. Many purchases were driven by a Maine statute requiring the purchase of recycled-content products. It included a 10 percent price preference for paper products. The state legislature suspended the price preference in fiscal year 1993/94, and Maine did not meet its recycled-content purchasing target that year. As a result, according to the 1996 EPA study, the head of the state's relatively small purchasing division suggested that "recycled products may not always be considered a high priority issue in Maine."

Despite several attempts, EPA was unable to reach anyone to discuss the current status of Maine's EPP efforts. Anecdotal evidence provided by others, however, suggests the state still has a very small purchasing division that continues some of its buy-recycled activities.

Minnesota

When EPA published its 1996 study, Minnesota was already beginning to expand its EPP program beyond "buy recycled." In addition to purchasing recycled-content products such as retread tires, re-refined oil, and paper, it was purchasing energy-efficient computers that had earned the ENERGY STAR®label. Minnesota had already purchased a few alternative fuel vehicles. Since then, the state has continued expanding its EPP activities.

The Minnesota Department of Administration handles a majority of the state's purchases and oversees about $1 billion in spending, $15 million of which is currently spent on products and services it considers environmentally preferable. The department also tracks all state purchasing contracts. When a contract is within 7 months of expiring, the Department of Administration alerts the Office of Environmental Assistance (OEA). OEA reviews environmental attribute information for products and services covered under the contract and makes recommendations for improving the contract's environmental performance.

For Additional Information

To learn more about Minnesota's Environmental Purchasing Program, visit the Office of Environmental Assistance's EPP web site at **www.moea.state.mn.us/lc/purchasing/index.cfm** and the Department of Administration's EPP page at **www.mmd.admin.state.mn.us/envir.htm**.

To further integrate EPP into the purchasing process, Minnesota requires new purchasers to undergo EPP training before becoming certified. Training includes an EPP guide that covers more than 30 products the state considers environmentally preferable. The guide addresses cost, performance, and availability of products

meeting the state's EPP criteria. The guide is currently distributed to state agencies, local governments, school districts, and universities.

Minnesota continues to pursue a multiphase EPP implementation approach. The first phase concentrated on making products that meet the state's EPP criteria available on state contracts. The next phase is providing training to state purchasers. The third phase will further clarify environmental attributes of concern to the state and refine efforts to track purchases of environmentally preferable products and services.

San Diego County, California

San Diego County's EPP efforts began when its board of supervisors adopted a buy-recycled resolution in 1992. At the time of EPA's 1996 study, 20 percent of the county's paper purchases included recycled content. The county was also buying remanufactured toner cartridges, retread tires, and re-refined motor oil, and incorporating recycled-content product information into its electronic purchasing system.

In April 1997, the board of supervisors passed a resolution mandating the Department of Environmental Health (DEH) to investigate expanding the county's buy-recycled program to incorporate EPA's EPP principles and guidelines. DEH established an advisory committee of environmental and purchasing specialists that met regularly for 1 year to discuss EPA's guiding principles, lifecycle assessments, and certification programs. It also discussed ways to certify manufacturers' claims. The committee then drafted a countywide policy based on EPA's EPP guidance.

Following development of the policy, DEH attempted to apply EPP principles to its paper purchases. It increased the postconsumer recycled-content percentage of its paper purchases to 30 percent. It considered purchasing chlorine free paper, but ultimately decided the chlorine issue was too complex. DEH was also preparing a matrix comparing the risks of different environmental impacts and developing a ranking of the most important environmental attributes when the county elected to move the EPP program to the Purchasing Division in April 2000. The Purchasing Division, which does not create actual purchasing specifications but "buys what it is told," does not currently have plans to expand the EPP program.

Washington

As reported by EPA in 1996, Washington's environmental purchasing efforts emphasized recycled-content products. A 1988 state law adopted EPA's Comprehensive Procurement Guidelines for recycled product purchases. Early efforts, while focused primarily on recycled-content paper and office products, also included compost, paint products, retread tires, re-refined lubricating oil, and building insulation.

Although the state does not have a formal EPP program, it has increased the purchase of products it considers environmentally preferable. The state currently spends approximately $22 million on products with environmental attributes (including recycled content). Approximately 80 percent of the copier paper sold through the state's Central Stores is 30 percent postconsumer recycled content. Almost 99 percent of the copiers the state government uses are Energy Star®-com-

pliant, and many of them are remanufactured. Washington also purchases low-mercury, low-energy lamps and ballasts, and many refurbished goods such as fencing, roofing, and furniture.

While the state considers many products available on its contracts environmentally preferable, customers either do not know about them or choose a more traditional product. The state purchasing office makes products with environmental attributes available, but the purchasers decide whether to purchase them or not. Additional educational efforts are necessary to expand the use of the environmentally preferable products available under these contracts.

Washington has purchased flexible fuel vehicles for several years, but the alternative fuels are not conveniently available. The state is currently exploring ways to make E85 (85 percent ethanol and 15 percent gasoline) more accessible to state vehicles. It is also plans to purchase a significant number of hybrid-electric vehicles, which improve environmental performance but still run on conventional fuels, in 2001.

Washington's Department of Ecology is working with the Office of State Procurement to incorporate additional environmental criteria into state contracts and to help increase EPP within the state. One of the first results of this collaboration was a state contract for environmentally responsible cleaning products. Successful bidders had to meet nine mandatory environmental criteria and were awarded additional points for other environmental attributes such as reduced packaging.

Washington is examining additional EPP opportunities. The janitorial services contract template, for example, might soon include additional specifications for environmentally responsible cleaning products. The state has an existing contract for recycled-content paint, but is investigating the possibility of specifying VOC levels and heavy metal content in new paint contracts. Research is also under way on EPP carpet specifications. Because of recent restrictions on the burning of agricultural waste, the Departments of Agriculture, Ecology, General Administration, and Economic Development are investigating ways to develop markets for straw-based building materials and straw-based paper.

Without specific mandates or funding, Washington is attempting to continue its research and purchase of products it considers environmentally preferable. It also continues to educate state customers about their availability.

Wisconsin

Wisconsin began buying recycled-content products after the state legislature emphasized it in buy-recycled legislation. A 1989 Wisconsin law requires the purchase of recycled-content products from a variety of categories, including paper and paper products, plastic and plastic products, glass and glass products, motor oil and lubricants, construction materials, furniture, and highway equipment (e.g., signs, signposts, guardrails). Following passage of the law, the state began buying a variety of recycled-content products and established a Recycled Products Clearinghouse. The state made this database of companies selling recycled-content products available via an electronic bulletin board system, a precursor to the modern Web page. Tracking for most recycled-content products was unavailable, but more than 50 percent of Wisconsin state agencies were buying recycled-content paper in 1995.

When the original EPA report on state and local government EPP activities was published in 1996, Wisconsin had plans to expand its EPP efforts beyond recycled content. The state had begun to explore additional environmental attributes such as chlorine-free paper and energy-efficient office equipment. By 1999, 98 percent of copy paper purchased by Wisconsin state agencies and universities was recycled content. One state official proudly explained that this was the highest buy-recycled percentage in the country. After October 1999, however, the state's Department of Administration (DOA), which coordinated the buy-recycled initiative and maintained the Recycled Products Clearinghouse, ceased providing those services because the state legislature did not include funding for them in the 2000 state budget. As a result, DOA will no longer actively support EPP efforts or maintain the clearinghouse.

Although DOA support for EPP was eliminated, Wisconsin's efforts to comply with federal Clean Air Act air quality standards led the state to purchase almost 1,400 alternative fuel vehicles. Additional purchases are planned. This suggests that EPP might continue to play a role in some state activities.

Appendix 2: Index of State and Local Governments

The following state and local governments are discussed in this case study. Please note, as explained in the disclaimer, this report is intended to show representative state and local government EPP activities. It does not attempt to include the efforts of every state and local government initiating such activities or every activity initiated by the state and local governments highlighted in the case study. If you have additional information on state and local government EPP activities, please share this information with Julie Shannon at **shannon.julie@epa.gov** or fax at 202 260-0178.

Appendix 3: EPP Resources

This appendix contains a brief list of EPP resources. It is not comprehensive. Selected organizations are included because they are referenced in this report or were mentioned during interviews with state and local government officials. The inclusion of specific resources on this list does not constitute endorsement or recommendation by EPA.

EPA's EPP Web Site

www.epa.gov/oppt/epp

EPA's EPP Web Site contains numerous resources, including a searchable EPP Contracts and Standards Database, which provides environmental information on more than 600 products. It also includes more than 40 contracts with environmentally preferable purchasing language. It also features an *EPP Promising Practices Guide*, an online source for green purchasing tips, strategies, and success stories, and the multimedia *EPP Training Tool*, where users are able to watch, listen, and learn as EPP is explained with audio narration and animated graphics. Background information on the federal EPP program is also available, including the Executive Orders outlining EPP and EPA's *Final EPP Guidance*. The site also makes numerous publications available, including almost a dozen case studies, fact sheets, and past issues of the *EPP Update*, a newsletter published by EPA's EPP Program.

EPPNet

www.nerc.org/eppnet.html

The Northeast Recycling Council (NERC) established EPPNet, the Environmentally Preferable Products Procurement Listserv, to link federal, state, local, and private procurement and environmental officials interested in purchasing environmentally preferable products. EPPNet is intended to provide this group with quick access to information such as: availability of product specifications, lists of vendors for particular products, pricing information, strategies to achieve recycled product procurement goals, and federal procurement policies.

King County, Washington, EPP Program

www.metrokc.gov/procure/green

King County's Environmental Purchasing Program Web site contains numerous EPP resources including: a model policy, contract language, detailed outlines of experience with several products (e.g., recycled glass, re-refined oil, plastic lumber), *EP Bulletins*, and links to various EPP resources.

Commonwealth of Massachusetts, EPP Program

www.state.ma.us/osd/enviro/enviro.htm

This comprehensive Web site includes valuable resources for procurement officials, including a registry where businesses and vendors can list their products and services for review. The site also contains useful detailed information on an extensive list of products, including specifications and fact sheets, and a thorough list of links to various EPP-related Web sites.

Minnesota, Environmental Purchasing

www.moea.state.mn.us/lc/env_purc.cfm

Minnesota's Environmental Purchasing Web site contains a unique searchable directory of recycled-content products made in Minnesota, as well as a list of model EPP programs in various state and local governments.

NACo's EPP Starter Kit

www.naco.org/programs/environ/purchase.cfm

Designed with local governments in mind, NACo's kit contains numerous resources to facilitate the implementation of EPP practices. The kit contains an overview of greening government purchasing opportunities, four case studies, a comprehensive list of resources, a sample environmental purchasing resolution, a baseline survey, and a model press release. The kit can be ordered through NACo's EPP Web site or by calling its publications department at 202 942-4256.

We want to hear from you! Please tell us about your environmentally preferable purchasing activities and efforts. We are collecting and sharing information, tools, and hints about what works and what doesn't, as environmentally preferable purchasing evolves and expands. Please contact the EPP program by e-mail, regular mail, or fax:

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