

Government Buying Can Save Tax Dollars and the Environment

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overnment procurement on the state and local levels amounts to approximately 12 percent of the U.S. gross national product. This purchasing power can, and should, be directed to advancing such national objectives as conserving natural resources, stimulating economic development, and promoting innovation. When officials spend taxpayers' money buying computers, photocopiers, paper, and other products, they need not passively accept the choices industry offers. Instead, using government procurement as leverage, they can encourage industry to manufacture more energy-efficient, environmentally-sound products. In this fashion, proactive government procurement can preserve both tax dollars and the environment.

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**Eleanor Lewis
and
Eric Weltman**
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Life-Cycle Cost Analysis Yields Smart Buying Decisions

Recognizing the long-term costs and benefits associated with purchasing decisions is essential to minimizing expenditures. This is because a seemingly inexpensive purchase price does not tell the whole story. Public institutions need to consider operating and maintenance costs, as well as waste disposal costs, of products and services.

For example, either a solar electric system or a diesel generator can provide power to flashing arrow boards that direct traffic around road construction sites. While the initial cost of a solar electric system may be more, its fuel—sunlight—is free. Its associated labor and mainte-

nance costs are far less than those for a diesel generator and the solar electric system produces no pollution. Seeing this advantage, Austin, Texas, purchased three solar-powered flashing arrow boards, with an investment payback of five years in fuel, labor, and maintenance savings. Austin workers prefer the solar electric systems because the systems are quieter and do not need to be refueled.

Consideration of the long-term costs of using compact fluorescent bulbs or conventional incandescent bulbs makes fluorescents the better buy. While the purchase price of a compact fluorescent bulb may be \$24 more than an incandescent bulb, the compact fluorescent consumes 75 percent less electricity and lasts six times longer. As a result, over its lifetime, a compact fluorescent bulb saves \$238 over an incandescent bulb in energy, maintenance, and replacement costs. By reducing the amount of fossil fuels used to generate electricity, a compact fluorescent bulb prevents the emission of 3,350 pounds of carbon dioxide gas, the chief contributor to the greenhouse effect.

The method used to calculate all costs associated with a purchase is life-cycle cost (LCC) analysis. LCC analysis is required for all federal government energy-related purchasing decisions. (Information on its use can be obtained from the U.S. Department of Energy's Office of Conservation and Renewable Energy.) Taking LCC analysis one step further leads to considering the entire "cradle-to-grave" environmental costs of manufacturing, using, and disposing of a product. For example, a decision to buy a solar electric system instead of a diesel generator should include consideration of the environmental and public health benefits of not using diesel fuel; the prevention of emissions of greenhouse gases, particulates, and acid rain pollutants; a safer, less polluting manufacturing process; and the cost and safety of disposing of the product.

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Energy Efficiency

Local governments consume about two percent of the nation's energy. This energy bill represents a large reservoir of potential savings. A 1991 survey by the National Institute of Governmental Purchasing found that only 19 percent of responding municipal employees received any assistance in purchasing energy-efficient products. And though many schools spend more on energy than on instructional supplies, a 1991 study by the American Association of School Administrators found that 34.6 percent of the nation's school districts have not conducted energy audits of any of their buildings.

There are three key components of a successful energy efficiency program: new technologies, improved care of existing equipment, and people. For such commercial buildings as offices and schools, lighting is usually the first efficiency target because it is a large component of energy consumption and savings are relatively easy to achieve. In a typical commercial building, lighting uses 40 percent of all electricity, and more than 50 percent when considering increased cooling load due to heat from the lights. According to the Department of Energy's Lawrence

Berkeley Laboratory, efficient lighting components can save 80 to 90 percent of the electricity used for lighting. Efficient lighting technologies include compact fluorescent bulbs and T-8 bulbs for ceiling fixtures; electronic ballasts, which regulate current through fluorescent tubes, to replace magnetic ballasts; reflectors, which direct light out of fixtures, reducing the number of bulbs needed; and occupancy sensors to automatically shut off lights in empty rooms. Phoenix, Arizona, retrofitted its municipal buildings with efficient lighting, and expects to save \$260,000 annually with an investment payback period of three years.

Efficient streetlights also should be used, since streetlighting usually ranks third behind water supply and wastewater treatment in municipal energy expenditures. In 1981, San Jose, California, began replacing its 48,000 incandescent and mercury vapor streetlights with high- and low-pressure sodium lights. Since completing the conversion in 1984, San Jose has reaped annual savings of \$3.5 to \$4 million.

Another area ripe for efficiency gains is such office equipment as computers, copiers, and printers. This equipment represents the fastest growing energy load in commercial buildings. According to E Source, a Boulder, Colorado, energy research institute, developments in technology and management techniques can reduce electric use in office equipment by 70 percent in the short term and 90 percent in the long term. By creating a demand for energy-efficient office equipment, governments can encourage equipment manufacturers to treat energy efficiency as a primary attribute of office equipment, along with capabilities, features, speed, and cost.

Water is another efficiency target. Water-efficient faucets, showerheads, and toilets reduce water use, as well as the energy needed to supply, heat,

and treat water. These devices work without sacrificing quality service. The District of San Simeon, California, instituted a program to replace toilets and showerheads in residences and hotels with water-efficient versions, reducing water consumption by 50 percent. The project is estimated to double the expected life of San Simeon's wastewater treatment facility. Escondido and Santa Monica, California, have instituted similar water efficiency programs.

Many energy-saving opportunities are based on better operation and maintenance of existing equipment. For example, Tempe, Arizona, purchased a pool cover for its Olympic-sized community pool. The cover reduces the heating bill by 25 to 40 percent each month, reduces chemical use by 20 percent, and reduces maintenance labor by 50 percent. In Lafayette, California, four schools reduced their energy consumption 10 to 29 percent in the 1990-91 school year, saving \$110,000, primarily through maintenance and operations changes, including setting the air conditioners at 78 degrees and shutting off all boilers early in April.

Administration and staff participation also is critical, as documented by two studies. A Department of Energy's Institutional Conservation Program (ICP) study found that when top management was involved, institutions achieved twice the savings of other ICP grant recipients. The state of California found that schools with comprehensive programs involving staff and students achieved greater savings than schools that concentrated on "quick-fix savings" or that lacked maintenance programs. One way to encourage staff involvement is to provide cash incentives to encourage energy efficiency. Eugene, Oregon, schools were allowed to keep \$50,000 of the \$220,000 that they saved in the 1991-92 school year. Many of them are using their savings to pay for field trips or additional energy efficiency measures. On the fed-

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eral level, the 1992 energy law allows federal facilities to retain a percentage of their energy savings for day-care and other programs.

Programs Assist Funding

The greatest obstacle to the implementation of energy-efficient projects is lack of capital. Fortunately, numerous government and private sector programs exist to fund energy projects. The most promising source of funds is electric utility "demand-side management" programs. To avoid the costs of new power plants, utilities are financing energy efficiency improvements, so customer demand does not exceed production capacity. Many electric companies conduct energy audits and pay cash rebates to customers installing energy-efficient equipment. For example, in Ulster County, New York, the local utility financed a \$143,000 lighting retrofit in county office buildings.

State programs also help finance efficiency measures. Such revolving loan funds as the Iowa Local Government Energy Bank and the Texas

LoanSTAR program provide money for energy efficiency projects and are repaid by the savings from these projects. The Texas School Energy Manager Program helps school districts pay the salaries of energy managers. The Department of Energy's Institutional Conservation Program (ICP) provides 50 percent matching funds for efficiency projects in schools and hospitals. Since 1979, the program has allocated \$860 million, with resulting cumulative savings of \$2.8 billion. ICP grants are available for buildings constructed before May 1, 1989.

Given the range of funding options, Montgomery County, Maryland, established a full-time position within its department of facilities and services to solicit and manage grants and rebates for efficiency measures. Since 1990, this position has helped the county obtain \$629,000 in funds for energy-efficient technologies and to incorporate efficiency into building design.

Recycled Products

Recycling programs are the nation's most visible conservation efforts. Yet in some municipalities, newspapers collected for recycling are stored in warehouses, and then because of lack of demand are either taken to the landfill or incinerated. In addition, due to lack of demand, less than 20 percent of the nation's printing and writing papers are collected for recycling. High-grade printing and writing papers, including office wastes, magazines, and junk mail, occupy 15 percent of the municipal solid waste stream—twice as much as newspaper. It is increasingly apparent that without increased demand for products made from recycled materials, collection programs will fail.

Public purchases of recycled products can stimulate demand for collected materials and encourage industry to build capacity to produce recycled products. Integral to buying

recycled products is establishing meaningful criteria for such products. This is because what manufacturers call "recycled" products may not use materials collected in recycling programs. For example, the paper industry considers scraps and cuttings from factory floors and old inventories "recycled" paper. Historically, this material has always been reused or exported and was never sent to landfills. When purchasing recycled paper, it is important to buy the product with the most "post consumer content" available. Post consumer content is wastepaper that has reached its end user, such as someone in a home or office, and has then been collected for recycling.

There are two obstacles that governments may face in purchasing recycled products: employee prejudice against recycled products and cost. Overcoming bias can be accomplished in humorous and effective ways. One purchasing agent began using recycled paper for a municipal newsletter, but did not publicize it until the paper had been used for several issues. After the recycled content was noted, readers complained about the paper's quality and asked to return to the paper used in the previous issue. Another purchasing official placed recycled copier paper in virgin paper packaging for several weeks, then started providing the recycled paper in its own packaging. When employees began complaining about "problems with the copier," he asked them if the virgin paper used in the previous weeks had caused any problems. It had not, and his point was made.

Costs of Recycled Products

In many cases, recycled products are cheaper than their virgin counterparts. Other products, like recycled printing and writing papers, can be more expensive. This is partly because the mills producing recycled paper are smaller and less efficient, a

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problem that will be overcome with increased demand. Another problem is the numerous government subsidies given to other methods of waste disposal and the use of virgin materials. For instance, many incinerators are financed in part by tax-exempt government bonds, whereas manufacturers using recycling materials usually must borrow money in the commercial market. The National Forest Service sells timber on federal lands at below cost to lumber and paper companies, thus subsidizing the production of virgin paper.

When comparing the costs of recycled and virgin products, governments should recognize that the benefits of recycling extend beyond saving landfill space. For example, up to 74 percent less energy is needed to produce recycled paper than is needed to make virgin paper. Recycled paper production uses 58 percent less water than virgin paper production and produces 74 percent less air pollution and 35 percent less water pollution than making virgin paper does. Recycling also is the safe alternative to incineration, which produces toxic air pollution and ash.

In addition, the Institute for Local

Self-Reliance reports that recycling is an efficient means of creating jobs and keeping money in a community. For instance, per 1,500 tons of solid waste discarded, recycling the waste produces 2.5 jobs, landfilling the waste produces one job, and incinerating the waste produces .1 job. In 1985, while analyzing New York City's economy, the Environmental Defense Fund found that the net benefit to the community in jobs produced and money spent from recycling was \$3 to \$4 per ton recycled and \$1 per ton incinerated. The institute also reports that for every million people who recycle, \$260 million is added to the local economy.

Municipalities and counties can reduce the costs of recycled products by purchasing through state contracts or forming buying consortiums. In addition, source-reduction techniques can save money. For example, dual-side copying saves paper, postage, and filing space. Itasca County, Minnesota, instituted a source reduction program for the 350 employees in its courthouse and road and bridge department garages. The county saved \$490 a year in purchasing costs by using reusable cups instead of single-use cups, and \$971 a year in purchasing costs by switching to cloth towels in its restrooms.

Though recycled paper is the most obvious recycled product for governments to purchase, many governments have been creative in exploring the marketplace for other recycled products.

- Newark, New Jersey, has one of the country's preeminent municipal "Buy Recycled" programs. It started in 1988, when the city began purchasing crumb rubber from tires to pave streets. Newark has purchased state-of-the-art equipment to recycle antifreeze and chlorofluorocarbons (CFCs) from its vehicular fleet. In 1990, an ordinance was passed requiring the city to buy such recycled products as paper, lu-

bricating oils, and recapped tires. Newark estimates that from 1988 to 1991, it has saved about \$5 million in avoided disposal costs for landfills, and has realized a net savings of about \$33,000.

- King County, Oregon, adopted a recycled product procurement policy in 1990. Among the items being purchased are ceiling tiles, carpet underlayment, and insulation made with recycled newspaper; cement concrete aggregate made with recycled concrete; playground mats made with recycled tires; and ceramic tiles made with recycled automobile windshields.
- Columbus, Ohio, is saving money by buying street signs made with recycled aluminum and recycling old signs that need to be replaced.

Too often, environmental and economic goals have been viewed as conflicting. But many local governments have found this is not true. Government purchasing can be a powerful force that uses tax dollars wisely and creates markets for energy-efficient, environmentally-sound products and technologies. **ENR**

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Energy Ideas is a monthly newsletter published by the Government Purchasing Project (GPP), free to public officials, that discusses energy-efficient technologies. The GPP's new book, *Forty Ways to Make Government Purchasing Green*, discusses government environmental initiatives, and includes case studies and resources. The book is \$10, with checks made payable to CSRL. Newsletter requests and book orders should be sent to GPP, P.O. Box 19367, Washington, D.C. 20036.