

CALIFORNIA – STATE ENVIRONMENTAL PREFERABLE PURCHASING

Environmental Sustainability

Being environmentally sustainable is to meet "current human needs without undermining the capacity of the environment to provide for those needs over the long term." [1] To achieve environmental sustainability, we must shop more responsibly. "The state, through environmentally preferable purchasing, has the ability to protect human health and environmental well-being by promoting goods and services that result in reduced waste and pollutants." [2]

Each year, our State's population increases by about 462,000. [3] This creates more demand for [energy](#), [water](#), and [materials](#), puts more strain on our transportation infrastructure and land resources, as well as increases pollution, [air emissions](#), and [waste](#). To help ensure a better future, we must use our resources more effectively. It's a question of being smarter about how we use our resources, rather than doing without.

That is why Environmentally Preferable Purchasing (EPP) is important to each and every citizen of California. This guide will help you select products that offer best value, not only in terms of cost and performance, but for the health of fellow employees and our environment ... and our families. Everyone makes a difference.

Environmentally Preferable Purchasing (EPP) refers to the procurement of goods and services that have a reduced effect on human health and the environment as compared to competing goods and services serving the same purpose.

California Statute says:

Environmentally preferable purchasing means the procurement or acquisition of goods and services that have a lesser or reduced effect on human health and the environment when compared with competing goods or services that serve the same purpose. This comparison shall take into consideration, to the extent feasible, raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, disposal, energy efficiency, product performance, durability, safety, the needs of the purchaser, and cost. [4]

This definition is similar to what is used by the federal government [5] and other states and local governments in part of a growing EPP movement.

California statute also provides clarity on potential concerns about EPP. It states explicitly that EPP cannot supersede recycled-content laws, require purchase of poorly performing goods, exclude adequate competition, or require unreasonable prices or lead times. [6]

EPP = Environment + Price + Performance

EPP is good for our environment. Identifying an environmentally preferable product requires a broad review of impacts that occur during the lifecycle of a product, from its production, use, to its reuse, recycling, or disposal. This analysis provides the information needed to understand impacts. Obviously, the analysis is not simple, and that is why this guide is designed to provide the best information available so there is less work for you.

EPP is best value. When a product creates too much pollution this impact is a cost to those who have to clean it up or get sick from it. The lowest price isn't necessarily the lowest cost. That is what EPP tries to sort out.

EPP is high-quality performance. When a product performs poorly it creates waste and this goes against the very definition of EPP. In other words, a poorly performing product is not environmentally preferable!

Environmentally preferable purchasing is policy in numerous places in the United States and abroad. As other locations demand environmentally preferable products, locations not setting similar standards risk becoming a dumping ground for products with less desirable environmental attributes. Californians benefit from policies that help keep products with harmful constituents out of our homes and workplaces, and an increase in demand for environmentally preferable products helps encourage manufacturers to create more of them.

Here is a sampling of organizations actively pursuing EPP:

Understanding Core Principles of Environmentally Preferable Purchasing

- [Product Life Cycle Assessment \(LCA\)](#)
- [Cradle to Cradle™ \(C2C\) product design](#)
- [Benefits to human health, the environment, and economy](#)

Part of the reason that EPP is being [practiced](#) by more and more organizations is that it is built upon core principles that benefit our economy, environment, and society. Consequently, although information gaps exist, by using a continual improvement process, better purchasing decisions will be made in the years to come.

Each of the topics below is an expansive field of study. Below are brief descriptions and additional resources.

- **Product Life Cycle Assessment (LCA)**

Life cycle assessment is a "cradle-to-grave" approach for assessing the environmental aspects and potential impacts associated with a product. "Cradle-to-grave" begins with the gathering of raw materials from the earth to create the product and ends at the point when all materials are returned to the earth. LCA enables the estimation of the cumulative environmental impacts resulting from all stages in the product life cycle, such as raw material extraction, material transportation, product use, and ultimate product disposal. By including the impacts throughout the product life cycle, LCA provides a comprehensive view of the environmental aspects of the product.

The LCA technique assesses environmental aspects and impacts by:

- Compiling an inventory of relevant energy and materials inputs and environmental releases,
- Evaluating the potential environmental impacts associated with identified inputs and releases, and
- Interpreting the results to make a more informed decision.

In practice, LCA can be expensive to perform, but costs are coming down as LCA is more widely used. Furthermore, there are several software tools available that make the analysis easier. LCA has been manipulated by some organizations to provide desirable results so anyone using LCA should consider how the analysis was funded and if it is from a non-biased source.

The United States Environmental Protection Agency has available an [introduction to LCA](#), case studies and resources. [7] There is an International Standard on Life Cycle Assessment in the [International Standards Organization's](#) Environmental Management Standards ISO 14000 series, found in ISO 14040.

- **Cradle to Cradle™ (C2C) product design**

In contrast to a "Cradle to Grave" approach, the C2C approach reorients the design of products and systems so waste from one process becomes an input to another. Waste equals food. There is no grave. This is accomplished by designing products and systems so materials can flow in closed-loop cycles as either biological nutrients or technical nutrients (e.g., metals and chemicals). In a C2C world, products are designed for reuse and recycling so materials can be separated from one another to eliminate contamination. If everything is reused, there is zero waste.

Expect to hear more about the C2C design, developed by William McDonough and Michael Braungart, as more Fortune 500 companies design products and systems using a C2C approach. In China, C2C is being used in the design of several new cities and as an industrial protocol. [8] In the summer of 2005, C2C certification became available for materials and products. [9]

In practice, C2C products may not be realized initially and it may be viewed as a long term vision for our industrial society. C2C forces product and systems redesign. The C2C movement can be expected to provide much better information on materials, which will assist product designers.

McDonough Braungart Design Chemistry (MBDC) created and developed the C2C approach, along with

the [C2C certification](#) program.

- **Benefits to human health, the environment, and economy**

EPP provides a variety of benefits that can range from financial, human health and the environment, to larger societal benefits.

Financial costs and benefits are the easiest to quantify. The purchasing price and frequency of purchase is weighed against operating costs, maintenance repair and replacement costs, occupational health costs, and liability. In contrast, environmental and societal costs and benefits are much harder to quantify and incorporate into decision making.

Commonly cited benefits include reduced air pollution and water emissions, materials and energy efficiency, less waste in landfills, reductions in hazardous and toxic substances, increased durability, etc. Many times we can't place a specific value to the benefits without extensive study. That is why there is legislation that directs the creation of allowable emissions or bans certain substances. It would be cost-prohibitive to analyze costs and benefits for individual situations.

EPP considers a product over its entire life, from raw material extraction to transport, use, and final end-of-use management or disposal. The analysis acknowledges direct and indirect environmental, health, and financial costs. Consequently, a product that has a lower initial purchase price than a similar but more environmentally preferable product, may cost more over the long term.

Unfortunately, complete analysis of the costs and benefits is quite rare and can be expensive. The result is that most emphasis is placed on the easy-to-obtain initial purchase price or "first cost," followed by operations and maintenance costs. As we become more sophisticated in analyzing a fuller range of benefits, better decision making can result. Fortunately, there are a variety of software tools that can assist in this analysis and over time we can expect to see better analysis.

Economic benefits include but are not limited to:

- Reducing materials consumption
- Providing a useful outlet for collected recycled material
- Reducing greenhouse gas emissions
- Conserving water
- Conserving energy
- Increasing the use of renewable products
- Reducing the presence of toxic and hazardous substances in the workplace and environment












These benefits in turn:

- Improve public and occupational health and safety
- Improve wildlife habitats
- Decrease air, water, and soil contamination
- Improve compliance with regulations
- Decrease costs associated with waste management, disposal, and cleanup
- Promote a sustainable economy
- Develop markets for environmentally preferable goods and services [\[10\]](#)

Here are some examples of where economic benefits exist:

- Avoiding hazardous substances and preventing pollution can reduce health and disposal costs and regulatory liability.
- Reusable, refillable, durable, and repairable products are usually more cost-effective over time than single-use or disposable products. [\[11\]](#)
- Conserving energy is a simple and effective way to save money.
- Purchasing copiers and printers that are capable of duplex printing can reduce paper costs.
- Some recycled-content products (RCP) - such as janitorial paper products, corrugated packaging, padded mailers, latex paint, compost, mulch, remanufactured toner cartridges, and many others - are priced the same as or less than their non-recycled counterparts. Some durable RCPs, such as recycled plastic lumber and rubberized asphalt, often cost more initially than comparable non-RCPs; however, they have lower overall costs because they are more durable and require less maintenance.
- Buying recycled products supports the economy. Diversion creates twice as many jobs, double the income, and twice the sales per ton of material than does disposal. [\[12\]](#)
- Using water efficiently reduces the cost of pumping, heating, and treating water.


Environmental Attributes and Symbols Used in this Guide



Environmental Attributes and Other Considerations	
	Less Hazardous
	Conserves Energy
	Recycled Content
	Prevents Waste
	Air Quality
	Conserves Water
	End-of-Life Management
	Waste/Materials Management
	Material Availability
	Global Warming
	Responsible Manufacturers



Environmental Attributes/Considerations and Symbols Used in this Guide




Symbols Used in this Guide: This chart contains a discussion of environmental attributes and considerations. Symbols have been assigned to most of these topics. The symbols are used throughout this guide to help you quickly identify the most accepted environmental and health issues related to a particular product. These symbols also help identify the advantages that environmentally preferable products offer compared to similar products. [13],[14]




Note: Some of the text and information in this chart was borrowed from the Solid Waste Management Coordinating Board of Minnesota [15] and the State of Washington. [16]

 <p>Less Hazardous</p>	<p>Avoiding hazardous products improves workers' safety, reduces pollution and regulatory liability, and lowers disposal costs. [17] Typical hazardous substances are toxic, corrosive, irritants, strong sensitizers, or are flammable or combustible. [18]</p> <p>Avoid products labeled with the following signal words:</p>
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	<ul style="list-style-type: none"> • Caution: mild to moderate hazard • Warning: moderate hazard • Danger: corrosive, extremely flammable, or highly toxic • Poison: highly toxic <p>If a non-hazardous alternative is not available, choose the least hazardous product; follow the directions on the label; use the least amount possible needed to accomplish each task; use up all of the product; and dispose of the container properly.</p> <p>Avoid products that require the use of hazardous substances for their maintenance.</p>
 <p>Conserves Energy</p>	<p>In 2000, each person in California used about 7,178 kilowatt-hours of electricity. [20] Reducing energy use is a simple and effective way to save money, keep our air clean, protect the environment, and combat global warming. Many forms of energy production have negative effects on human health and the environment, such as air pollution, greenhouse gas emissions, acid rain, habitat degradation, and toxic spills and releases.</p> <ul style="list-style-type: none"> • Look for products that have low embodied energy (the energy that goes into producing a product) and do not require energy to operate, or if they do, they use energy efficiently. • Look for the federal government's Energy Star label that helps buyers identify energy-efficient products. • Visit California's Flex Your Power Web site for energy-saving tips. • California has appliance efficiency regulations.
 <p>Recycled Content</p>	<p>Buying recycled-content products (RCP) creates demand for recyclables from local collection programs; reduces waste going to landfills; creates jobs; and conserves natural resources. In addition, many RCPs take less energy to produce than their virgin counterparts.</p> <p>Total recycled content = postconsumer content + secondary content.</p> <p>Postconsumer material comes from products that are used by consumers and then recycled; therefore, using postconsumer material directly supports the recycling programs of local jurisdictions. Secondary material consists of fragments of finished products or finished products of manufacturing processes, and this material is recycled before it reaches consumers.</p> <p>Use State contracts, California Multiple Award Schedules (CMAS) contracts, and the Recycled-Content Product Directory to find products that meet or exceed the State Agency Buy Recycled Campaign's minimum content requirements, and those that contain the highest amount of postconsumer material.</p>

	<p>In addition, the United States Environmental Protection Agency (US EPA) sets recycled-content levels for a variety of products through its Comprehensive Procurement Guidelines program. If a federal, state, or local agency (or its contractors), spends more than \$10,000 a year on a US EPA-designated item, and part of that money is from appropriated federal funds, then that item must be a recycled product. [21]</p>
 <p>Prevents Waste</p>	<p>Californians dispose of tens of millions of tons of waste each year. [22] Much of this waste comes from disposable and over-packaged products.</p> <p>Preventing waste ("Waste prevention" is also known as "source reduction.") can conserve natural resources and save landfill space. You prevent waste when you:</p> <ul style="list-style-type: none"> • Reduce the amount of material you buy to accomplish any task; • Reuse a product in its original form; or • Use repairable, refillable, or durable products. <p>Look for products that either weigh less as compared to alternatives that perform the same function, or otherwise result in less materials that must be managed, while being reusable or recyclable, without additional toxic or hazardous substances, and with better or equal durability, easy maintenance, and good performance. Good product design is at the heart of source reduction.</p>
 <p>Air Quality</p>	<p>Reducing air emissions - both outdoors and indoors - is a primary concern for all Californians. According to the California Air Resources Board, "despite significant success in reducing overall pollution levels, air pollution continues to be an important public health problem. Air monitoring shows that over 90 percent of Californians breathe unhealthy levels of one or more air pollutants during some part of the year." [23]</p> <p>Sources of outdoor air pollution include fuel-burning motor vehicles and equipment, windblown dust from roadways, agriculture, and construction; industrial processes, pesticides, fireplaces, woodstoves, and businesses, such as dry cleaners and service stations. [24]</p> <p>Indoor Air Quality (IAQ)</p> <p>Sources of indoor air pollution include heaters, fireplaces, chimneys, wood and gas stoves, consumer products, such as those used for household cleaning and maintenance, personal care, and hobbies; biological contaminants, radon, tobacco smoke, furniture, and building materials and products. [25]</p> <p>"Americans spend on average more than 80 to 90 percent of their time indoors. Over the past decade, concerns over indoor air quality have been well documented, along with effective solutions. Indoor pollutants can cause building occupants to experience acute discomfort and negative health effects, such as respiratory irritation, headaches, fatigue, etc. Some substances, like radon and carbon monoxide, can pose fatal risks ... enhanced IAQ potentially averts serious health issues and can save enormous sums of money required to treat them. In commercial environments, improving IAQ has been shown to increase worker productivity by up to 16 percent. Because labor accounts for up to 92 percent of the life-cycle building costs (far outweighing energy), the value of increased worker productivity can be significant. Furthermore, occupant satisfaction and healthfulness represent important, though difficult to measure, benefits of improved IAQ." [26]</p> <p>Low Volatile Organic Compounds (VOC)</p>

	<p>Choosing products with low or no VOCs reduces indoor air quality hazards for employees. Concentrations of many VOCs are consistently higher indoors than outdoors. [27] VOCs are carbon-containing compounds that evaporate into the air (with a few exceptions). They contribute to the formation of smog and/or may themselves be toxic. [28] Adverse health effects include eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to the liver, kidneys, and central nervous system; some are suspected or known to cause cancer in humans. [29]</p> <p>VOCs often have an odor, and sources of VOCs include paints, cleaning products, pesticides, building materials and furnishings, office equipment, such as copiers and printers; correction fluids, carbonless copy paper, adhesives, and permanent markers. [30] Low-VOC versions of many of these products are readily available.</p> <ul style="list-style-type: none"> • Learn more about indoor air quality from the California Air Resources Board. • Look for products that emit zero or low amounts of volatile organic compounds. • Look for products that conserve energy, since burning fossil fuels produces air pollution.
 <p>Conserves Water</p>	<p>Selecting products and services that conserve water can reduce sewer and water bills. In addition, efficient water use reduces the need for expensive water supply and wastewater treatment facilities, helps maintain healthy aquatic and riparian environments, and reduces the energy needed to pump, treat, and heat water. [35] Water is used in the manufacture of products, during a product's use, and in cleaning. Consequently, water efficiency and pollution prevention can occur in several product life cycle stages.</p> <ul style="list-style-type: none"> • Less than one percent of the Earth's water is readily available for human use. • Each person in California uses about 200 gallons (includes indoor and outdoor use) of water per day. [36],[37]
 <p>End-of-Life Management</p>	<p>When selecting a product, consider what will happen to it at the end of its useful life. Can it be recycled easily? Does the manufacturer have a take-back program? Does it require special disposal because it contains hazardous chemicals? A product with a lower purchase price may cost more in the long run because of higher disposal, health, and safety costs.</p>
 <p>Waste/Materials Management</p>	<p>Californians dispose of tens of millions of tons of waste each year. [38] As we strive to be a zero waste state, we must manage this waste by first preventing waste whenever possible and managing all "waste" materials to their highest and best use.</p> <p>The California Integrated Waste Management Act of 1989 (Public Resources Code section 40050 et seq.), also known as Assembly Bill (AB) 939, established a 50 percent waste diversion (diversion from landfills) goal for local government based on an integrated waste management hierarchy that prioritized waste prevention and recycling over all other options. It also enhanced public outreach programs and environmental education curricula and improved landfill safety requirements and protection for public health and the environment. [40]</p> <p>AB 75 (Strom-Martin), Statutes of 1999, Chapter 764, requires each State agency and large State facility to meet a 50 percent diversion goal, also.</p>

	<p>Effective materials management keeps waste out of landfills and prevents the impacts associated with the extraction of raw materials. Extending the life of landfills reduces the pace at which new ones must be sited, along with the very significant costs associated with siting landfills and long term maintenance and operations, closure, and monitoring.</p>
 <p>Material Availability</p>	<p>Ultimately, everything that we use comes from the Earth. Any time we reduce the extraction of natural resources - by cutting down fewer trees, mining fewer minerals, or pumping less oil from the ground - we may reduce our impact on the environment and human health, and save resources for future generations. We can use our material resources more efficiently through source reduction, using less virgin material, applying material-efficient product design, reducing waste during manufacturing, and using materials that have been diverted from the waste stream to manufacture new products.</p>
 <p>Global Warming</p>	<p>In the United States, most of the greenhouse gas emissions (about 82%) are from burning fossil fuels to generate electricity and power our cars. [41]</p> <p>Increased human emissions of greenhouse gases are accelerating global warming, and California is particularly vulnerable to the impacts of climate change. Increased temperatures threaten to greatly reduce the Sierra snowpack, one of the State's primary sources of water. Increased temperatures also threaten to further exacerbate California's air quality problems and adversely impact human health by increasing heat stress and related deaths, the incidence of infectious disease, and the risk of asthma, respiratory and other health problems. Rising sea levels threaten California's 1,100 miles of valuable coastal natural habitats and real estate. The combined effects of an increase in temperatures and diminished water supply and quality threaten to alter micro-climates within the state, affect the abundance and distribution of pests and pathogens, and result in variations in crop quality and yield. [42]</p> <p>Find out how you can help prevent global warming at the following Web sites:</p> <ul style="list-style-type: none"> • California's Flex Your Power Web Site • United States Environmental Protection Agency's Global Warming Actions Web Page
 <p>Responsible Manufacturers</p>	<p>Consider products provided by manufacturers that demonstrate commitment to environmental protection and improvement by any or all of the following:</p> <p>Environmental Policy The manufacturer has a written environmental policy that is consistent with requirements in the voluntary ISO 14001 International Standard on Environmental Management Systems (EMS), including a stated commitment to comply with environmental legislation and regulations as well as a commitment to continual improvement and prevention of pollution.</p> <p>Environmental Management System The product manufacturer certifies that all its manufacturing facilities have third-party registered ISO 14001 Environmental Management Systems.</p> <p>Corporate Reporting Based on Global Reporting Initiative (GRI) The product manufacturer produces an annual public report that includes, but is not limited to, elements of the Global Reporting Initiative (GRI) Sustainability Guidelines.</p> <p>State of California Environmental Awards The product manufacturer or supplier has been recognized in California for their environmental practices as a recipient of the Governor's Environmental and Economic</p>

Using this Guide to Select Environmentally Preferable Products

Use this Guide to help you:

- Choose more environmentally preferable products and services in numerous categories.
- Write environmental specifications into your bid solicitations.
- Tap into Web sites and other resources related to environmentally preferable purchasing.
- Identify ways you can reduce waste in your office, shop, or facility.
- Locate surplus and reuse programs to obtain low-cost or used equipment and supplies.

The subject matter specific sections* of the Guide cover specific products and services commonly purchased by government. To help you make informed purchasing decisions, the following topics will be addressed for each product or service:

- general product **Background**
- related **Environmental and Health Issues**
- applicable **Laws and Guidelines**
- history of **Performance**
- **Cost** considerations
- product **Vendors**
- sample **Specifications**
- additional **Resources and Web Sites** [\[43\]](#)

*Subject matter specific sections will be added over the next few months. The first one that is available covers [copier paper](#), and future sections will cover the full range of products and services that State agencies use, including, but not limited to, office supplies and machines, vehicles and other transportation-related products, outdoor furnishings, maintenance and operations products, and building materials. Please stay tuned!

Existing Laws, Mandates, and Guidelines California

Statutes, regulations, executive orders, and guidelines direct the State of California to practice and promote EPP. This demonstrates the state's commitment to leading by example to protect public health and the environment and support markets for environmentally preferable products and services.

Please note that the following discussion is not comprehensive. Mandates and guidelines that relate to specific products, substances, and services are referenced throughout this manual within the subject matter specific chapters.

- [Environmentally Preferable Purchasing Law](#)
- [State Agency Buy Recycled Campaign](#)
- [State Agency Waste Diversion](#)
- [Executive Order S-20-04](#)
- [Executive Order S-7-04](#)
- [Executive Order S-3-05](#)
- [Regulations and Guidelines](#)
- [Federal Executive Order 13101](#)

Environmentally Preferable Purchasing Law: [Public Contract Code sections 12400-12404](#) [AB 498 (Chan), Statutes of 2002, Chapter 575]

The EPP law, enacted in September 2002, directs the Department of General Services (DGS), in consultation with the California Environmental Protection Agency (Cal/EPA), members of the public, industry, and public health and environmental organizations, to provide state agencies with information and assistance regarding EPP including, but not limited to, the following:

- The promotion of EPP.
- The development and implementation of a strategy to increase EPP. This may include the development of statewide policies, guidelines, programs, and regulations.
- The coordination with other state and federal agencies, task forces, workgroups, regulatory efforts, research and data collection efforts, and other programs and services relating to EPP.
- The development and implementation, to the extent fiscally feasible, of training programs designed to instill the importance and value of EPP.
- The development, to the extent fiscally feasible, of an EPP best practices manual for state purchasing employees.

The Secretary of the State and Consumer Services Agency, in consultation with the Cal/EPA, established the [Environmentally Preferable Purchasing Task Force](#) to develop a strategy to achieve the goals set forth in AB 498. The task force comprises representatives from various State agencies with specific fiscal, procurement, and environmental policy expertise.

[State Agency Buy Recycled Campaign](#) (SABRC)

[Public Contract Code sections 12150 et seq.](#), requires State agencies and the Legislature to purchase products with recycled content. The legislation is implemented jointly by the Department of General Services (DGS) and the California Integrated Waste Management Board (CIWMB). It complements the efforts of the [Integrated Waste Management Act](#) [AB 939 (Sher), Statutes of 1989, Chapter 1095], and the statute regarding State agency waste diversion [AB 75 (Strom-Martin), Statutes of 1999, Chapter 764] which were enacted to reduce the amount of waste going to California's landfills.

Additional information regarding the SABRC mandates, how your agency is doing, or who your primary contact is regarding reporting is available in [Chapter 3 of the Purchasing Authority Manual](#) and from the CIWMB's [State Agency Assistance Section](#).

[State Agency Waste Diversion](#)

[Public Resources Code sections 42920 et seq.](#), require each State agency and large State facility to divert 50 percent of its waste from landfills or transformation facilities by January 1, 2004. State agencies implement a wide variety of programs to meet the diversion mandates. Reported programs range from source reduction to full recycling programs which request, and in some cases require, employees, contractors, and visitors to recycle.

Additional information regarding the waste diversion mandate, how your agency is doing, or who your primary contact is regarding reporting is available in the [Public Resources Code](#) and from the CIWMB's [State Agency Assistance Section](#).

Executive Order S-20-04

California's [Green Building Executive Order](#) (Executive Order S-20-04) established the State's priority for energy and resource efficient high performance buildings. It directs the State to commit to aggressive action to reduce State building electricity usage by retrofitting, building, and operating the most energy and resource efficient buildings by taking all cost-effective measures described in the [Green Building Action Plan](#) for facilities owned, funded or leased by the State. Cities, counties, schools, and commercial building owners and operators are encouraged to do the same.

One significant measure that is mentioned in this Order is for the State to design, construct, and operate all new and renovated State-owned facilities paid for with State funds as "LEED Silver" or higher certified buildings. LEED - the [U.S. Green Building Council's](#) Leadership in Energy and Environmental Design rating system - is the nation's leading green building rating system. It promotes "high performance" building practices; energy, water and materials conservation; environmentally preferable products and practices; improvements in employee health, comfort and productivity; and reductions in facility operation costs and environmental impacts.

Executive Order S-7-04

Governor Schwarzenegger's Hydrogen Highway vision sets forth a blueprint for government and private agencies to work together in planning and building a hydrogen infrastructure. In his signing message, he stated "The goal of the California Hydrogen Highway Network initiative is to support and catalyze a rapid transition to a clean, hydrogen transportation economy in California, thereby reducing our dependence on foreign oil, and protecting our citizens from health harms related to vehicle emissions. We have an opportunity to deal with these problems by investing in California's ability to innovate our way to a clean hydrogen future, thus bringing jobs, investment, and continued economic prosperity to California. We have an opportunity to prove to the world that a thriving environment and economy can co-exist."

In the months that followed, a group of some 200 volunteers from auto companies, energy companies, fuel cell manufacturers, government agencies, non-governmental organizations and others worked in a well-orchestrated set of task forces to develop the [California Hydrogen Highway Blueprint](#).

The [California Hydrogen Highway Web site](#) provides information and resources about hydrogen fueling stations planned for the State's twenty-one interstate freeways.

Executive Order S-3-05

[Executive Order S-3-05](#) established the following [greenhouse gas](#) (GHG) emission reduction targets for California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels. The Secretary of the California Environmental Protection Agency is charged with the coordination of the oversight of efforts to achieve these targets.

Regulations and Guidelines

Aside from the aforementioned laws and executive orders, there are state laws and regulations that address:

- energy efficiency
- water conservation
- specific substances that pose health, safety, or environmental problems
- integrated waste management

Energy efficiency regulations limit the amount of energy and water that various products may use. Water conservation is covered in the energy efficiency regulations because water use (pumping and treatment) in California consumes significant amounts of electrical energy. [44] Whenever we use less water, we save energy.

Substances and materials of concern generally are identified as toxic or hazardous, or pose unique environmental problems, such as waste disposal safety issues. These substances may directly or indirectly contaminate our land, water or air resources and end up harming people and the environment.

Products that have associated mandates run the gamut and include paper, consumer products, electronic equipment, building materials, and pesticides.

In addition to the aforementioned mandates, various state agencies are directed to provide information and recommendations to the public. Consequently, there are various guidelines that identify products and practices that result in less energy or water use, zero waste, and reduced air or water emissions. To the extent it is feasible and cost effective, state purchasing officials are encouraged to follow any such guidelines.

Existing Laws, Mandates, and Guidelines

Federal

Federal Executive Order 13101 of September 14, 1998:
Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition

Federal [Executive Order 13101](#) strengthens and expands the Federal government's commitment to recycling and buying recycled-content and environmentally preferable products. Among other things, it:

- Defines key terms;
- Elevates implementation of waste prevention and recycling activities to a new, White House-level Steering committee;
- Discontinues all government purchases of printing and writing paper not containing 30 percent postconsumer fiber by the end of 1998;
- Provides new ways for the Federal government to build markets for environmentally preferable products and services;
- Increases government purchases of bio-based products to develop markets for these items;
- Requires all Federal facilities to comply with recycling and recycled content purchasing requirements under the Federal Facility Compliance Act;
- Requires agencies to establish long-term goals both for waste prevention and recycling and for buying recycled and environmentally preferable products. [45]

- Directs federal agencies to track and measure results and to report progress. [\[46\]](#)

[EPP Practitioners at the Federal Level](#)

Guidance for Integrating EPP Commitment into an Organization's Existing Management System

The California Environmental Protection Agency (Cal/EPA) is implementing its EPP program through an Environmental Management System (EMS) at its Sacramento headquarters--the first State agency in California government to do so. More information can be found on [Cal/EPA's EMS Web site](#).

More and more leaders in government organizations at all levels--local, state, and federal--understand that improving procurement decisions is an important area of environmental stewardship and a key strategy in pollution prevention. Greening the government's supply chain is proving to be a powerful strategy in making real and lasting environmental improvements, reducing health and safety risks, and strengthening businesses who are leading the transition to an environmentally sustainable economy.

Increasingly recognized as a best practice, government organizations are making the transition from managing EPP initiatives as special pilot projects to standard operations, integrating their EPP policy goals and implementation activities into the organization's existing management system.

Understanding the necessary elements of an effective EMS is needed to assure EPP commitments are not neglected after the transition from a special initiative (with management attention) to more routine operations. Voluntary requirements, as well as guidance, for effective environmental management systems are covered in International Standards. A widely accepted model for an EMS is the [ISO 14001 Standard](#) adopted by the International Organization for Standardization.

EMS implementation is recognized by leaders in all levels of government and by many successful private sector businesses as an important management tool. An EMS is an integrated set of management processes designed to continually improve the ability of an organization to achieve its environmental and related business goals. The EMS approach reflects the "plan-do-check-advance" cycle of continual improvement.

Leaders in governmental organizations have observed the following benefits:

- Increased efficiency, reduced costs, and greater operational consistency.
- Improved ability to meet compliance requirements.
- Improved environmental awareness, involvement, and competency throughout the organization.
- Better communication about environmental issues inside and outside the organization.
- Better relationships with stakeholders.

The U.S. EPA has developed guidance for organizations on how to integrate their EPP efforts into existing management practices and processes, including an [EMS](#). Much of the information is applicable to all types of organizations, not only federal facilities, and includes case studies, practical guidance, potential language for, and Federal facility examples of integrating green purchasing into each element of the ISO 14001 International EMS Standard.

Sustaining long term EPP commitment positions an organization to reap the benefits as the marketplace continues to respond with more environmentally preferable alternatives. Longer term sustainability of an EPP program is enhanced by integrating EPP into existing management processes and further enhanced by including systematic management of other environmental impacts which may be significant to the organization, such as energy conservation, fleet management, waste reduction, and sustainable building operations and maintenance. Organizations may choose from a variety of paths to improve their ability to reach their environmental and business goals:

1. Implement a sustainable EPP program by verifying that the important elements of an effective management system, as described in ISO 14001, are in place.
2. Begin with an EPP program and then consider implementing a full EMS to manage EPP as well as other significant environmental impacts in a systematic manner.
3. Begin with implementing an EMS in order to better manage EPP along with other environmental

impacts significant to the organization.

To reduce the Federal government's environmental footprint and improve the implementation of green purchasing and other greening the government initiatives, the President mandated that all appropriate Federal facilities implement EMSs by December 2005. More information is available from the [Office of the Federal Environmental Executive](#).

Acquiring Environmentally Preferable Products Finding Existing Environmentally Preferable Products

Environmentally preferable products are those products that have a lesser or reduced effect on human health and the environment when compared with other products that serve the same purpose. A review of the guiding principles and available products and sources will help you acquire products that meet these requirements.

Guiding Principles

Questions to ask before purchasing a product include:

- Is the product less hazardous?
- Is it reusable or more durable?
- Is it made from recycled materials? Do we really need to buy a virgin product when the recycled version is just as good?
- What happens to the product at the end of its life? Can it be recycled? Will the manufacturer take the product back? Will it need special disposal?
- Does it conserve energy or water?
- What is needed to properly maintain and/or operate this product?
- Have its environmental attributes been certified by a non-biased, widely-accepted source?

"Depending upon which product you are buying, all or only a few of these questions will apply. One challenge in buying wisely is knowing which questions to ask. With the Guide helping to put environmental issues in context,

asking these questions will become second nature." [\[47\]](#)

Available Products and Sources

The California Department of General Services develops and administers contracts for goods and services that have environmental attributes. Many of these contracted products and services are healthier and safer for people, and protect the environment. [Local governments](#) have access to these contracts as well. These contracts are available on the Procurement Division's Web site at:

- [Statewide Contracts](#)
- [Statewide Contracts for Recycled-Content Products](#)

For information on using a particular Statewide contract, review the contract or contact the DGS buyer named in the contract.

- [California Multiple Award Schedules \(CMAS\) Green/Recycled Content Contractors](#)

For information on using CMAS contracts, visit the [CMAS web page](#) or contact a CMAS Representative.

The United States Environmental Protection Agency maintains a [Database of Environmental Information for Products and Services](#) - a tool to make it easier to purchase products and services with reduced environmental impacts. Environmental information on hundreds of products and services is included in this database.

This database will help you buy greener products and services by linking you to:

- Samples of contract language, specifications, and policies created and used by federal and state governments and others to buy environmentally preferable products and services.
- Environmental standards and guidelines for the product you want to buy.
- Vendor lists of product brands which meet these standards.
- Other useful sources of information on the environmental preferability of products and services (e.g., EPP Updates, guidance documents, fact sheets, EPP case studies, and miscellaneous information useful to government purchasers).

Acquiring Environmentally Preferable Products

Developing Competitive Specifications for Environmentally Preferable Products

Many state and local governments are required to develop competitive specifications for the products they are acquiring. These specifications typically identify physical and performance features of the product. In developing these specifications, one can follow a structured approach to meeting both the needs of the end user and the needs of the environment. This approach consists of:

- [Needs Assessment](#)
- [Developing Green Specifications](#)
- [Using Existing Standards \(Green Seal, Energy Star, etc.\)](#)
- [Life Cycle Cost Assessment](#)
- [Best Value Assessment](#)

Needs Assessment

When developing specifications, the very first thing that should be assessed is the need for the product. This involves determining:

- Why do you need the product?
- How is the product going to be used?
- What is the product going to be used for?
- Who is going to use the product?
- What products are available on the market?

Answering these questions will help you determine the actual requirements of the product you are about to acquire.

Developing Green Specifications

In developing your specifications, you will be identifying and prioritizing these requirements into a biddable document. This list of requirements should include a description of the physical and performance characteristics of the product. You should also identify any or all of the environmental requirements of the product. Examples include:

- Lead free
- Mercury free
- 50% postconsumer recycled content

When developing your performance requirements, you must be specific in what you expect the product to adhere to. These requirements must be obtainable, measurable, and verifiable. Using general language like "Low VOC" is not a measurable or verifiable requirement. A specific attainable level of VOCs should be identified.

In developing these specific requirements, one additional criterion must be addressed, and that is the level of competition available to meet your requirements. Establishing a set of performance requirements that limit your competition among suppliers will undoubtedly raise the cost of such products. Maintaining an equitable number of suppliers while including environmentally friendly performance requirements will enable you to achieve the best results.

Using Existing Standards

The best method of specifying your performance requirements is to identify existing environmentally friendly standards and specify product compliance with these standards. Examples of existing environmentally friendly standards include:

- [Energy Star](#)
- [Green Seal](#)
- [ISO 14000](#)

These standards cover a large percentage of available products on the market today and insure that the products purchased will have the least impact on the environment during product development and throughout their useful lives. For example, [Green Seal](#) conducts a life-cycle evaluation of the product category that evaluates the major environmental impacts in each life-cycle stage including resource extraction, production, distribution, use, and eventual disposal or recycling. The evaluation considers energy, resource use, and emissions to air, water, and land, as well as other environmental and health impacts. The purpose of this evaluation is to identify significant life-cycle stages to be addressed in the standard. The evaluation also ensures that the environmental criteria selected will not lead to the transfer of impacts from one stage of the life cycle to another or from one medium (air, water, land) to another without a net gain in environmental benefit. [48]

When purchasing products which have yet to be assessed using these environmentally friendly standards, the specifier has a couple of options. They are:

- Life Cycle Cost Assessment
- Best Value Assessment

A word of caution: These two unique product assessment tools require extensive research and involve detailed evaluation methodology development for assessing value of both the products and the companies supplying the products. Individuals wishing to use either one of these product assessment tools should check with their internal

Procurement Departments for authorization and assistance in developing such assessment methodologies.

Life Cycle Cost Assessment

A life cycle cost assessment of a product is a true quantitative evaluation of the product's overall cost rather than simply assessing the initial purchase price of the product. The life cycle cost assessment takes into consideration the purchase price, the operational costs, the maintenance costs, and finally the disposal cost of a product. These costs are assessed throughout the product's useful life. An example of developing a life cycle cost assessment on a typical fleet vehicle with an expected life of seven years is as follows:

- Purchase price: \$14,000
- Operational costs (Fuel Usage): \$800/year x 7 years = \$5,600
- Maintenance Cost (Scheduled Service Intervals): \$300/year x 7 years = \$2,100
- Salvage Value (10% of purchase price): \$1,400

Therefore, the total evaluated assessed cost would be: $\$14,000 + \$5,600 + \$2,100 - \$1,400 = \$20,300$.

As you can imagine, the various cost factors affecting the initial price, operation and maintenance costs, and salvage value will vary from one product to the next and will even vary from brand to brand. It is imperative that the evaluation criteria used to determine a total life cycle cost of a product be consistently applied to all products being evaluated. Evaluating products based on the total cost over their useful lives will help ensure the purchase of the most economic and energy efficient products available on the market.

Best Value Assessment

Like life cycle cost, best value assessment looks at other parameters outside of the initial purchase price of the product. However, best value assessment is more of a qualitative assessment rather than a quantitative assessment. Determining the best value of a product requires identifying specific attributes a product offers and assigning a weighted point system to those attributes. Such attributes associated with typical commodities could include:

- Price
- Embodies one or more of these environmental attributes:
 - Less Hazardous
 - Conserves Energy
 - Recycled Content
 - Prevents Waste
 - Improves Air Quality
 - Low Volatile Organic Compounds (VOC)
 - Conserves Water
 - End-of-life Management
 - Waste/Materials Management
 - Material Availability
 - Reduces Global Warming
 - Responsible Manufacturers

Once all attributes have been identified that best embody the solicited product, a weighting system can be developed that assigns a specific amount of points for each attribute identified. When using percentages, make sure all percentages add up to 100%. Example:

Price -- 40%
Conserves energy -- 10%
Recycled content -- 10%
Improves air quality -- 10%
Conserves water -- 10%
Reduces global warming -- 10%
End-of-life management -- 10%
Total -- 100%

Now a point system can be applied to all potential suppliers and the supplier with the maximum amount of points

will be the supplier providing the Best Value. See table below for a sample evaluation.

Weighting System Example

Each supplier will be given a rating based on how they compared with the industry as a whole or with other suppliers offering similar products. In this case, a maximum of 10 points was assigned to each attribute. It is imperative that the evaluation criteria used to determine the point ratings of each supplier be consistently applied to all suppliers being evaluated.

Attribute	Rating	Weight	Score
Price	7	40%	2.8
Conserves Energy	4	10%	0.4
Recycled Content	9	10%	0.9
Improves Air Quality	5	10%	0.5
Conserves Water	6	10%	0.6
Reduces Global Warming	8	10%	0.8
End-of-Life Management	10	10%	1.0
Total			7.0

Acquiring Environmentally Preferable Products

Tracking Product Performance and Continually Improving

Consider tracking the total purchase of environmentally preferable products in your workplace. Tracking purchases can help you note what has worked well and where problems have been encountered. Benefits include identifying whether suppliers priced the products competitively, made them readily available, and met your expectations.

To assist you in keeping track, you may wish to use a form similar to the one developed by the [Minnesota Department of Administration](#). A list of codes for environmental products follows.

Model Tracking Form

Buyer's Name		Agency		
Phone No.		Fax No.		
Quarter and Year of Report (by fiscal year)				
Environmentally Responsible Acquisitions				
Order or Contract No.	Category Code	Supplier	Product	Dollar Amount

				Total:

Environmental Codes for Tracking Purchases

EE = Energy Efficient

A product that uses less energy (either electricity or fossil fuel) to accomplish its task relative to a comparable product by the same manufacturer.

LT = Less Toxic

A product containing a smaller amount of toxic substances relative to a comparable product or a product reformulated to be less toxic.

PB = Plant-Based

A product derived from renewable resources, including fiber crops (such as kenaf); chemical extracts from oilseeds, nuts, fruits and vegetables (such as corn and soybeans); agricultural residues (such as wheat straw and corn stover); and wood wastes generated from processing and manufacturing operations. These products stand in contrast to those made from fossil fuels (such as petroleum) and other less renewable resources (such as virgin timber).

RB = Rebuilt

A product refurbished to a level less than a total remanufacture. The warranty is by the rebuilder, and may be different from the same product when new or remanufactured. Also called reconditioned or refurbished.

RC = Recycled Content

A product containing materials recovered or diverted from the solid waste stream after consumer use ("post-consumer").

RK = Reduced Packaging

A product presented for use with less packaging or alternative methods of packaging or shipping.

EM = Remanufactured

A product restored to its original condition by extensive rebuilding, usually given an equal or better warranty than a new product.

RE = Repair

A product that has had a defect corrected and can again serve its original function. Repairing is a less comprehensive process than either remanufacturing or rebuilding.

US = Used

A product used or owned before without further maintenance.

WC = Water Conserving

A product that requires less water to operate or to manufacture than a comparable product, or a different version of the same product from the same manufacturer.

MU = Multiple Codes

A product that has several significant environmentally responsible characteristics, and could be classified under more than one code, but not one code is predominant

TO = Other

A product having environmentally responsible characteristics that does not fit into any of the categories listed

above.

Glossary

Source reduction: Per Public Resources Code section 40196, "source reduction" means any action which causes a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, reducing the use of nonrecyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, reducing the amount of yard wastes generated, establishing garbage rate structures with incentives to reduce waste tonnage generated, and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic, and other materials. [49]

Waste prevention: See [source reduction](#). [50]

Notes

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Special Note: Portions of the Environmentally Preferable Purchasing Best Practices Manual were borrowed or adapted from the [Environmentally Preferable Purchasing Guide](#) published by the Solid Waste Management Coordinating Board of Minnesota.