Environmentally Preferred Sourcing Program EPS Toolkit: Building and renovation

New building and renovation activities provide many opportunities for implementing sustainable practices. Starting at the design phase through construction, a select use of materials, the choice of lighting and heating-ventilation-air conditioning (HVAC) systems, and applying green thinking can yield cost savings while contributing to a healthier workplace. Building designs that increase access to natural light and connect to nature have shown to improve productivity and reduce length of stay.

Benefits

- Energy savings
- Decreases maintenance costs
- Increases product life
- Reduces disposal costs
- Compliance with federal and state environmental regulations
- Improves staff and patient safety

What you can do

Several suggestions follow, as well as in the two sections titled Building Materials and Building Maintenance.

Adopt LEED or GGHC building guidelines

Use Leadership in Energy and Environmental Design (LEED®) or the Green Guide for Health Care (GGHC) as your guideline for all renovations or new builds by enacting a policy or request for proposal language that states all new buildings and renovations must follow the guidelines, where applicable, of one of these existing standards.

Choose environmentally friendly building products

Many environmentally friendly building products are now available and well-tested for performance. Express the desire for less hazardous and environmentally preferable products both with your architect and building contractor. Request evidence of each product's environmental performance, including any certification, labeling or documented research findings demonstrating the product's environmental preferability. Ask questions about:

- The types of materials used in the product to learn if they are from recycled or recyclable products and whether they contain hazardous chemicals
- Installation procedures, including use of adhesives or finishes
- Emissions during or after installation and during the cleaning process
- Verification of any environmental claims and guarantees on the end-of-life options for the product

Use the right product appropriately

It's not just about choosing green products, but using them appropriately. In a well thought out building design, substituting green products for conventional products can make the difference between a good building and a green one.

Consider all the functional requirements including infection control standards, acoustics, light reflectance, indoor air quality, use of the area and housekeeping criteria, and carefully balance these with choosing products made of materials that minimize impacts to the built environment. The American Institute of Architects provides helpful guidelines in this area.

Define standards that are important to you

Identify quantifiable, easily verifiable standards. Apply multiple criteria if necessary, because a product may be considered green for more than one reason. For example, recycled plastic lumber, made from recycled waste, is highly durable and can prevent the need for pesticide treatments. Some key criteria to keep in mind include:

- Energy and water efficiency
- Products made with salvaged, recycled or agricultural waste content. For example, reclaimed wood comes from old houses, flawed wood, wood scraps or recovered logs. Look for the Rainforest Alliance's Rediscovered Wood Certification.
- Recyclable content and manufacturer take-back and recycling programs (for example, carpet or ceiling tile) — ensure that recycling systems are actually available, not just theoretically possible
- Indoor air quality attributes — low volatile organic compounds, no formaldehyde, styrene or other toxicants
- Mercury-free — all HVAC, switches, relays, manometers, thermometers, thermostats, etc., or low-mercury (lighting)
- Sustainably harvested fiber products — for wood and other agricultural fibers used in building and renovations. For certified sustainable wood, the Forest Stewardship Council and the Rainforest Alliance are the most widely used standards.

Survey existing buildings for items that could be salvaged and reused

Renovation yields opportunities for reusing building components or salvaging them for another building.

Strategies include:

- Review existing furnishings and equipment to determine which items are in good condition and could be reused, salvaged for another project or donated to a nonprofit group.
- Identify system components and equipment with reuse potential, such as chillers, ductwork and lighting.
- Weigh their reuse in light of future energy efficiency, indoor air quality or early replacement.
- Assess doors, paneling, shelving, wood, stone/marble, lighting fixtures, windows, etc., for possible uses.
- Evaluate these with function, proposed location and ease of removal and storage (time/cost) in mind. Consider that entire buildings can be reused through renovation, whether for the same or new use.
- Don't assume that new always performs better. Energy modeling for two Environmental Protection Agency (EPA) buildings found that adding interior storm windows saved more energy than new windows, cost less and didn't expose the interior to the elements during construction.

Require construction and demolition recycling

Require contractors to recycle construction and demolition waste. Steps to take include:

- Work with the contractor(s) to develop a waste management plan including establishing recycling and recovery goals.
- Use source separation recycling if space allows, providing containers for each type of waste (wood, drywall, cardboard, metal).
- Reduce contamination of recyclables by placing general waste containers next to containers for recyclables.
- Use small, wheeled containers for local collection that can be dumped into larger containers to make it easier for construction workers to separate their recyclables right where they are working.

Add waste management concepts to the design criteria

Sample strategies include:

- Design to standard material sizes as much as practical, to avoid cut-off waste in plywood, gypsum board, block, panels, etc.
- Consider pre-fabricated components, because off-site manufacturers are more likely to control and recycle waste.
- Use materials that are durable and low maintenance. Choose materials with recycled content.
- Select materials, building components and furniture from manufacturers that use minimal packaging, or will take it back for reuse.
- Use language in your design request for proposal such as: "Demonstrated success in prescribing the use of recovered materials and achieving waste reduction and energy efficiency in facility design."

Anticipate future changes with a flexible design plan

Planning for change can minimize demolition, renovation and its related waste. Strategies include:

- Plan for easy technology upgrades with accessible, organized wiring and expandable systems, such as cable trays and raised floors.

- In office areas, choose modular sizes for interior rooms to reduce the frequency and extent of renovations.
- Design flexible mechanical systems, considering building management systems, points of control and monitoring, maximizing zoning, system modularity, etc.
- Use mechanical fasteners (screws, nails, clips) to join materials rather than glue, and choose manufactured components without fused materials. A hung ceiling can be totally recycled whereas ceiling tiles glued to the slab become waste.
- Require labeling of components in construction, to make modifications easy and prevent unnecessary replacement and exploratory demolition.

What is LEED?

The LEED Green Building Rating System™ is a third-party certification program and a nationally accepted benchmark for the design, construction and operation of high performance green buildings. Maintained by the U.S. Green Building Council, LEED promotes a whole building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

What is the GGHC?

The Green Guide for Health Care™ is the health care sector's first quantifiable sustainable design tool kit integrating enhanced environmental and health principles and practices into the planning, design, construction, operations and maintenance of their facilities.

The Forest Stewardship Council is an independent, nongovernmental, not-for-profit organization established to promote the responsible management of the world's forests. The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices.

What are some design attributes to consider?

- **Acoustics** — For sound control, choose products with Ceiling Attenuation Class (CAC) ratings of 35 or greater. This rates a ceiling's efficiency as a barrier to airborne sound transmission— the higher the number, the better the product. The "noise reduction coefficient" is a measure of how much sound is absorbed by a particular material, and is derived from the measured sound absorption coefficients and should be no less than 0.70. These values are listed in manufacturer's product data pages.
- **Light reflectance** — A measure of a material's ability to reflect visible light, it is that fraction of the specified incident light striking a surface that is reflected by the surface. High-light-reflectance ceilings, meaning those with a light reflectance value (the ability of a ceiling to reflect light) of 0.83 or higher, can make lighting systems more effective while reducing energy costs and consumption.
- **Indoor air quality** — Specify products that meet or exceed the indoor air quality requirements of California's Special Environmental Requirements, Specifications Section 01350, as specified in California Department of Health Services Standard Practice CA/DHS/EHLB/R-174.

Building materials

Building materials include lumber, ceiling products, flooring and paint. There are a growing number of environmentally preferable building materials in the marketplace.

Strive to include a high percentage of these products in your renovations, new construction or interior design efforts.

What you can do

Use third-party certification

Use third-party environmental certification as a product screen for buying building materials. Always investigate what the standard certification is based on before specifying a certification or label. Building product third-party certifiers include:

- Environmental Choice EcoLogo Certification
- Green Seal
- Green Guard standard — note that the standards for schools are higher than the general standards Forest Stewardship Council Wood Products certification
- Carpet and Rug Institutes Green Label Plus Program
- California High Performance Schools program standards

Talk with your environmental services staff before you purchase

Work closely with your environmental services staff to ensure that whatever material you pick is compatible with their cleaning requirements or to help them adapt their processes to work well with the selected product. Consider the conditions of the area: Do you need moisture resistant materials, non-slip properties, or reduced maintenance?

Refurbish rather than replace

Products that are cosmetically damaged but still structurally sound may be refurbished for reuse. For example, ceiling tiles can be cleaned, sanitized and deodorized then have a water-base coating applied to increase light reflectance, sound resistance and enhance fire ratings.

Specify recycled content

Specifying recycled content is an important way to reduce waste going to landfills — as long as you ensure that the product still meets your specifications with regard to indoor air quality. For example, choose recycled carpeting that closes the loop by using carpet waste as feedstock.

Put take-back systems in place

Require the vendor to provide a system to take back and responsibly recycle building materials like carpet and ceiling tiles at end of life. Ask for information on the percentages actually recycled into new materials, and the percentage that goes to the landfill and prefer vendors who recycle higher percentages.

Use recycled paint

There are two types of recycled paint available, including reblended (also known as consolidated) and reprocessed.

- Reblended paint is 100 percent post-consumer latex paint with similar characteristics (e.g., type, color family and finish) and no virgin materials such as resins and colorants added. Well-suited to use in low-traffic areas, where color is less important, reblended paint is typically used for exterior applications or as an undercoat. Many states have paint reblending programs.
- Reprocessed paint is post-consumer latex paint that has been sorted by a variety of characteristics including type (i.e., interior or exterior), color and finish (e.g., high-gloss versus flat). Reprocessed paint is available in various colors and is suitable for both interior and exterior applications.

What are volatile organic compounds?

Volatile organic compounds (VOCs) are released during the paint drying process. Virtually everything but the solids in a typical paint formulation is released to the air. Once in the atmosphere, they react with oxygen to produce ozone, the most toxic component of smog.

To prevent the formation of excessive levels of ozone, the VOC content of paint and its conditions of use are subject to regulation by federal, state and local environmental agencies. EPA regulations define VOC very broadly. In effect, any volatile compound of carbon is classified as a VOC, unless specifically “exempted.”

Building maintenance

Ongoing operations and maintenance procedures are inextricably linked to energy efficiency, sustainable practices and the health and safety of building occupants and visitors.

What you can do

Implement the Energy Star Program in your facility

Compare your energy use with EPA’s national rating system, which allows you to measure the energy efficiency of your facilities and compare them to others across the U.S. Once you establish this baseline, use Energy Star Program tools and resources to prioritize your investments, set goals, and track your success.

What is Energy Star?

Energy Star is an international standard for energy efficient products, first created by the U.S. government in 1992. Since then, Australia, Canada, Japan, New Zealand, Taiwan and the European Union adopted the program. Devices carrying the Energy Star logo, save 20 percent to 30 percent energy on average. Energy Star specifications differ with each item, and are set by either the EPA or the U.S. Department of Energy.

Specify high-efficiency boilers, chillers and air conditioners

All HVAC units should be properly sized and selected for high efficiency. Make existing Energy Star or Federal Energy Management Program standards a basic requirement, with preference given to those models showing the highest energy efficiency ratings. The U.S. Department of Energy provides several Energy Management Program fact sheets on buying energy efficient equipment.

Install properly designed lighting

Careful lighting design is key in reducing energy consumption while maintaining adequate light for safety and efficiency. Strategies include:

- Use day and task lighting to reduce the need for additional lighting
- Maximize lamp and ballast efficiency
- Maximize system efficiency, not just the components
- Use automatic controls to turn lights off or dim lights in day lit spaces
- Establish maintenance schedules for group relamping and fixture cleaning

Use fluorescent and LED lighting

Fluorescent and light emitting diode (LED) lighting is much more efficient than incandescent lighting and should be preferred wherever feasible. Some models cost more up front, but all outlast incandescent lights and will save money in energy use reductions over their useful life. Be aware that these lamps contain mercury. Request mercury disclosure (with specific amounts contained per lamp) and specify the lowest mercury models appropriate for Energy Star when purchasing lighting.

Why use LED light bulbs?

Consider piloting the use of mercury-free LED lamps or very low mercury fluorescent induction lighting, with instant on-off control, offering reduced energy usage and long life. Energy Star-certified LED bulbs use about 90 percent less energy than standard incandescent bulbs, provide the same brightness with less energy, and last 15 to 25 times longer. They save over $55 in electricity costs over each bulb's lifetime and produce about 75 percent less heat.

Establish a water conservation program

Conserving water reduces energy use. Start by auditing your current water use. You can do this by installing water meters at strategic locations in the facility. Read or record water readings weekly and analyze the data, then look for high water-use areas, trends, and unusual occurrences. Water conservation opportunities include the following:

- Correct drips, leaks, and unnecessary flows in bathrooms, laundry and kitchens
- Repair and adjust flush mechanisms on toilets so that they work as designed
- Install toilet tank water displacement devices on older models or replace inefficient toilets and urinals with low-flow models
- Specify drought tolerant and native vegetation, and avoid the use of turf in landscaping
- Irrigate grounds and wash vehicles less often, and use smart irrigation systems that reduce irrigation based on weather conditions
- Increase employee, patient and visitor awareness of water conservation by using posters, newsletter articles and suggestion boxes, and ask them to report dripping facets or running toilets
- Before selecting new equipment, check out third-party tests to determine actual effectiveness. For example, under third-party maximum performance (MaP) tests, toilets are tested to see how much waste they will flush away instead of their ability to clear away a minimal amount of media
- Install flow reducers (<2.5 gallons per minute) and aerators on sinks and showers Install automatic shut-off valves or motion sensor-activated faucets
- As appliances and equipment wear out, replace with air-cooled or water-saving models
- Turn off the continuous flow used to clean the drain trays of the coffee and soda beverage island (only clean the trays as needed)
- Reprogram washing machines to eliminate additional rinse cycles, if possible and not restricted by the health department
- Wash full loads only or reduce water levels to minimize water required per load of washing

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The Vizient Environmentally Preferred Sourcing (EPS) Program offers members supply and service cost savings through more than 36,000 supplier agreements. EPS suppliers have verified EPS attributes and provide products that can support members' sustainability objectives. This toolkit is a resource to help members create or enhance their sustainability programs.

As the nation's largest member-driven health care performance improvement company, Vizient provides network-powered insights in the critical areas of clinical, operational, and supply chain performance and empowers members to deliver exceptional, cost-effective care.

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