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In this world of dwindling natural resources, high energy and maintenance costs and increased environmental awareness, it is imperative that today's public library facilities set a positive sustainable example for the communities of which they are a part.

The following list of green strategies represents a simple environmental approach which can be adopted by any public agency in an effort to put their best green foot forward.

While some of the suggestions are as simple as policy changes, others require a bit more effort.

All are, however, designed to be easily adopted by both new and renovated facilities.

### **1. Collection of Recyclables**

Effective on site recyclable collection helps to conserve natural resources, reduce the need for land fills and incineration, saves energy and prevents pollution caused by extraction and processing of virgin materials.

Appropriate collection systems should include:

**Paper:** Paper is of course made from trees. Recycling paper reduces the amount of trees used for paper production and preserves natural resources.

**Aluminum:** Aluminum is one of the rare products that can be renewed indefinitely. The energy that is saved from producing one ton of aluminum from virgin materials is enough to provide over 10 years of power for a typical home.

**Plastics:** Plastics account for 11% of all municipal waste in the United States.

**Glass:** The production of virgin glass requires significant power and resources. Recycled glass is substituted for up to 70% of raw materials. Manufacturers benefit from recycling in several ways—it reduces emissions and consumption of raw materials, extends the life of plant equipment, such as furnaces, and saves energy. Recycled glass is substituted for up to 70% of raw materials. Manufacturers benefit from recycling in several ways—it reduces emissions and consumption of raw materials, extends the life of plant equipment, such as furnaces, and saves energy.

## **2. Smart Material Choices / Carpet**

There are several smart choices when it comes to recarpeting an existing facility. Several manufacturers have initiated programs in which carpet is almost “rented” and then given back for recycling once it has been retired. They will then supply the facility with new recycled carpet and the loop continues!

Recycling carpet avoids contributing to local land fills, saves power and energy and conserves resources used in the production of virgin materials.

Utilizing carpet tiles instead of rolled goods prolongs the life of the carpet and helps with maintenance issues.

Carpets with a more dense fiber count prolong life and increases durability in high traffic areas.

Additionally, choosing colors and patterns that hide wear and stain helps to prolong the life span of the rug and increase durability.

## **3. Smart Material Choices/ Linoleum**

Substitution of linoleum for vinyl composition tiles (VCT) is a 100% organic and completely natural alternative. Linoleum has an increased life span and has been shown to wear well for over 40 years.

All of the products used in manufacturing are completely recyclable and renewable and there is no harmful off gassing or volatile organic compounds known within the product.

Natural linoleum is also self healing and can because of its completely natural composition; linoleum can be used on floors as well as table tops.

## **4. Smart Material Choices/ Paint**

Believe it or not, some public buildings are actually still utilizing lead based paints which can be poisonous. Additionally, sustainable paint choices can eliminate harmful “off gassing” as well as prevent mold and mildew which can often formulate on the surface of most enamel paints.

## **5. Reduce Solar Heat Gain/ Window Films**

Effective window coatings which are easily applied to existing window surfaces can reduce solar heat gain by as much as 65%. Reducing the heat gain can reduce HVAC requirements and therefore reduce energy requirements and maintenance costs.

Certain window films can also reduce lighting loads and increase the amount of usable natural light.

## **6. Reduce Solar Heat Gain/ Sun Shades**

Utilizing horizontal as well as vertical exterior sunshades and solar protection can reduce heat gain significantly as well as glare. Reducing the direct sun light can also reduce HVAC requirements while still providing natural ambient light.

## **7. Reduce Solar Heat Gain / Cool Roofs**

A cool roof system—one that reflects solar radiation and emits thermal radiation, Keeps a building cooler and helps reduce air-conditioning costs. Researchers at LBNL and the Florida Solar Energy Center (FSEC) have measured cooling energy savings of up to *60 percent* for individual buildings where white roof coatings were applied to dark roof systems. Cool roofs are often simple and affordable to apply to existing roof structures.

## **8. Water Conservation/ Waterless Urinals**

The substitution of waterless urinal systems over conventional systems can reduce water consumption by an average of 45,000 gallons per year per urinal! Waterless urinals also do not utilize flush valve systems therefore eliminating installation and maintenance costs. Additionally, waterless urinals are a dry system which is more sanitary than traditional systems and therefore also contribute to a healthier indoor environment.

## **9. Water Conservation/ Landscape**

Drought tolerant landscape can greatly decrease annual water use and maintenance costs. Substituting a “xeriscape” landscape concept as opposed to traditional landscape can again drastically reduce water use and maintenance. Bio swales and on site water retention help to control water run off from a building site as well as controlling silt and pollutants found in typical run off.

## **10. Water Conservation/ Elimination of Turf**

The elimination of large or even small turf areas on a typical site can drastically reduce water consumption and almost eliminate maintenance costs and concerns. The use of indigenous grasses and drought tolerant landscape is also more appropriate and often times more attractive. Additionally, drought tolerant planting can eliminate the need for costly irrigation systems.

## **11. Energy Reduction/ Lighting**

The substitution of more energy efficient lighting systems can drastically reduce energy consumption and cost. Utilizing T-8 florescent fixtures as opposed to the more common T-12 fixtures can result in a 40 – 60% energy savings which provides a 30 – 50% return on the initial investment. Since T-8 lamps are more efficient they also have longer life spans and require less frequent replacement.

Reduction of the lighting load can also reduce the load placed on HVAC systems therefore making them more efficient as well.

## **12. Energy Reduction/ Occupancy Sensors**

Occupancy sensors are simple devices that switch on and off the lights in a room based on occupancy or lack thereof. Some spaces, such as restrooms can remain empty as much as 70% of the day. Eliminating constant illumination in these types of spaces can drastically reduce power consumption as well as cost.

## **13. Energy Reduction/ Dimming Systems, Appliances**

Automatic dimming systems are simple devices which can be integrated to existing lighting controls. In situations where there is a great deal of available natural light, the dimming systems will automatically dim down and eventually shut off completely should it register a high enough level of light within the space. If the natural light condition changes, the electric lighting is automatically restored. This simple device can be one of the most effective means to reducing energy consumption and costs within a structure.

The selection of efficient appliances and equipment such as Energy Star rated appliances can greatly reduce energy consumption as well as provide the potential for monetary rebates.

## **14. Systems Verification**

Review the performance of mechanical systems and equipment regularly to verify proper operation. Maintain indoor air quality by installing and replacing filters for all intakes and re-circulated air. Systems that are not operating as designed can produce unnecessary energy demands on a building and provide inadequate indoor air quality. This problem is one of the primary causes of sick building syndrome.

## **15. Task Lighting**

Utilize task lighting in staff areas and study areas throughout the library to reduce the reliance on ambient light sources.

## **16. Green Housekeeping Practices**

Green Housekeeping is a just the selection of environmentally preferable products as well as a whole program, which includes the involvement of the building users, the evaluation of cleaning practices and equipment, and training for all personnel.

## **17. Paper Versus China**

Use china and glass instead of disposable plates, utensils and glassware whenever possible. For washing use biodegradable soaps and detergents. If disposable dishware and silverware is a must utilize bio-disposable products. Verify the product content is

indeed bio-disposable; many companies will use clever “green” names and yet contain no bio-disposable materials.

### **18. Eliminate Sick Building Syndrome!**

Institute a non-smoking policy for interior as well as exterior spaces.

Use a phosphate free fertilizer for exterior plant materials.

If waxing floors is necessary, use metal free, phthalate free finish and ventilate the space adequately.

### **19. Social Responsibility**

Institute an environmental-preferred purchasing program and have a disposal policy in place for items that are not cradle to cradle products.

Support the community- buy local and utilize local services whenever possible.

Recycle computer peripherals, electronic equipment, and batteries. Create a take back program for end of life management.

### **20. Reduce Emissions**

Provide incentives for carpooling such as preferred parking for staff.

Provide inviting pedestrian access ways.

Encourage alternative vehicle use.

Provide adequate, well located and well lit bicycle parking areas for staff as well as patrons.

### **21. Green Education Systems**

Green awareness begins with education. The integration of on site educational systems can greatly increase the awareness of smart sustainable design practices and therefore proliferate green strategies throughout a community. Additionally, well-designed graphic educational systems can add interest and beauty to both a building as well as a site.

### **22. Alternative Energy**

While not quite an affordable green strategy, alternative energy sources can provide a dramatic sustainable statement to a community while also providing on site renewable energy.

Systems include; photovoltaic arrays which harvest the power of the sun to provide energy and wind turbines which generate power through the force of the wind to name a few.

Additionally, apparent and obvious sustainable strategies such as rain water harvesting, cisterns, compost toilet systems and on site grey water recycling can provide.

## **Five Best Practices in Designing and Building a Sustainable Library**

### **1. Partnering**

Joining forces with organizations such as the United States Green Building Council or your local power supply company can maintain sustainable goals and focus the entire design process.

In addition, selections are narrowed and the decision making process is streamlined. Potential funding sources as well as rebate programs are also available.

LEED as well as Savings by Design through Southern California Edison are great examples of programs that can keep your eye on the green!

### **2. Go For Experience!**

Nothing is as valuable as experience when it comes to smart and successful green design strategies.

Don't let your architect or builder learn about sustainable design on your project. Libraries and public buildings are built as public bid jobs and under public scrutiny. As such, there is no room in the budget to make up for a design team's learning curve. The process must be certain and focused to achieve the greatest success. Inexperienced teams often lead to "greenwashing" practices which can cost projects both time and money.

### **3. Understand the Process**

Don't be afraid to ask questions! Learn all you can about the design process and the sustainable strategies. You can't become a green advocate unless you understand green design!

Always ask to see the proof of the strategies to be employed making sure that each individual direction is thought about holistically.

### **4. Follow a Holistic, Integrated Approach**

Avoid "greenwashing" or selecting green strategies in a vacuum simply because they are obvious or enticing. Make sure that green selections make sense to the overall project vision.

Understand the results of each green decision to verify that the selections made are in fact sound.

Always insist on team design and construction team members that are in sync and understand the ultimate green as well as functional goals of the project. A green team is only as strong as its weakest link.

Always make sure that your goals and decisions are consistent with the sustainable strategies.

LPAINC, one of the leading sustainable design firms in the nation. With offices in both Northern and Southern California, LPA has the ability to provide a multi-disciplined approach to architectural design. With more sustainable and LEED Certified projects completed than any other firm in the state, LPA is foremost in the creation of smart, green strategies for both public and private facilities.

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