



## Green Building Practices

Shedd Aquarium cares for more than 25,500 individual animals, each with its own unique and specific needs. In addition, Shedd houses more than 700 staff and volunteers and over 2 million guests visited the aquarium in 2006. Managing the facility and collection in a sustainable manner poses daily challenges, inspiring flexibility and innovation and resulting in many creative solutions.

Sustainability is integrated into every aspect of Shedd operations. A conservation ethic permeates our culture, energizes our staff and volunteers, inspires our guests and colleagues, and supports Shedd's vision for a healthy global environment.

Your organization can become more sustainable, too! Use our best practices as a starting point or modify this list to create your own strategy for sustainability. Routinely assess the overall impact of your decisions and you'll soon discover that supporting a healthy environment is also good for your business!

### Old Aquarium, New Tricks

Shedd has been dedicated to aquatic conservation and education since our opening in 1930. Shedd was constructed, however, in an era long before the contemporary notion of sustainability became a desired goal for architects. Bridging our original construction with current technology has allowed Shedd to undertake major green improvements to our infrastructure. In 1996, we developed a comprehensive, long-term energy reduction plan, which included energy efficient fixtures, motion sensors and computerizing our life support systems for our exhibits. This plan resulted in a reduction of total energy consumption by 79%: 61% in MBTUs and 18% in Therms. Continuing along this path, we have recently undertaken the following capital projects: The PowerPure System, "free cooling", a soy roof and a new boiler plant.

### The PowerPure System

The PowerPure System removes scale and deposits using a chemical-free system that breaks up their molecular structure. The equipment runs clean and efficiently, saving approximately 2 million gallons of water and \$10,000 annually.

### Free Cooling

Chicago is well known for windy, chilly days. On days below 40°F, condenser water is rerouted through a plate and frame heat exchanger and into a cooling tower on our roof. Large fans within the unit lift the heat and the water cools as it falls over a series of baffles. The chilled water is looped back into the aquarium habitats. Because we no longer need to run mechanical chillers during the winter months, we have seen substantial energy and financial savings.

### The Soy Roof

When roof upgrades were needed, Shedd made the green decision to coat the surface with a soy-based polymer. This coating, unlike a petroleum-based asphalt roof, is white and highly reflective. The roof reflects the sunlight and slashes energy usage by reducing the demand for cooling in the building. The coating is non-toxic, non-polluting and created from a renewable resource. Projected savings over the roof's 20 year life are approximately 95,000-kilowatt hours and \$219,000 in utility fees. In 2005, Shedd hosted an exhibit to educate visitors about the many benefits of soy, providing guests with the opportunity to see how soybeans were grown, harvested and transformed into polymer-roofing products.





## Boiler Plant Replacement

Shedd's new boiler plant consists of three flexible water tube boilers. The primary pumps, all base-mounted with premium-efficiency motors, are sized to provide full flow through all three boilers. Secondary hot water zones were reduced from six to four. Variable frequency drives on the secondary pumps help meet overall zone demand. Old insulation was replaced to meet ASHRAE 90.1 requirements. The boiler is operated through our Building Automation System, allowing us to control the valves, pumps and temperatures. We anticipate a 20% savings in energy costs with a payback of less than two years.

## Green Design

Shedd's current and future construction projects include green construction materials and technologies, including low VOC paint, natural lighting, and high efficiency systems and machinery. Facility upgrades, retrofits and alterations are aligned with the USGBC's LEED Standards for Existing Buildings. Future plans include utilizing gray water, rain water and installing low volume water fixtures.

## Horticulture

Shedd's award winning gardens and lawns boast the use of non-synthetic fertilizer and chemical-free pesticides. An organic produce garden supplies our Food Service department with fresh herbs and produce. Native, xeric landscaping features plants adapted to tolerate dry conditions, requires less watering and provides habitat for pollinators and local wildlife. Our rain garden features native plants and prevents storm water run-off from our terrace. The sprinkler system waters only in the early morning to maximize absorption by the soil. We mulch the cut grass into the lawn and mow early in the morning, reducing exhaust fumes on hot Chicago afternoons. Ground cocoa shells from Chicago's Blommer Chocolate Factory serve as mulch for the gardens and they smell good, too!

## Recycling

Shedd recycles aluminum, plastic, glass, paper, printer and fax cartridges, cell phones, cell phone accessories and ink cartridges, cardboard, batteries, fluorescent bulbs, HID and other mercury containing bulbs, office furniture, Tyvek envelopes, and electronic waste (computers, monitors, keyboards, cords, disks, PDAs, and other electric devices). While we pay for battery and bulb recycling, we earn

a small profit from our cell phone and baled cardboard programs. We also host multiple recycling drives throughout the year for items such as gym shoes and eyeglasses. Since 2003, Shedd has collected pre-consumer food and horticulture scraps and sent them to an off-site composting facility. This effort has kept over 75 tons of plant material out of the landfill. We also purchase the processed compost to use on our lawns and gardens.

## Anti-Idling Zone on our Loading Dock

Shedd recently installed anti-idling signs on our loading dock and bus loop. The purpose of the signs is to reduce greenhouse gas emissions from vehicles that are in close proximity to the Aquarium. Additional signs for the Museum Campus are being considered by the Chicago Park District.

