## **SAINT LOUIS ZOO CONSERVATION EFFORTS**

For nearly 90 years, the Saint Louis Zoo has been known for its innovative approach to preserving and protecting endangered animal species from around the world. Now, the zoo's innovation is aimed at preserving its own natural resources.

In 2002, the zoo joined with the Missouri Department of Natural Resources (DNR) to review its use of water and energy. The zoo wanted to improve the facility's use of each resource. Zoo staff formed the resource conservation and recycling committee, which was to work with the department's Outreach and Assistance Center on resource use.

The zoo hosts three million visitors annually. Most people visit zoos to see tigers, snakes, and similar exotic creatures. Making resource preservation a feature of the zoo is a natural fit. "It's not enough to save species of animals in zoos and aquariums any more," said Dr. Jeffrey P. Bonner, president of the zoo. "Many endangered species will not make it into future decades unless world resources and ecosystems are protected."

Improved resource management will help the zoo set an important new example for the public. Just as important will be the money saved. The funds can be redirected to benefit both animals and visitors, according to Steve Barth, the zoo's chief financial officer. "We expect the change in our culture to enhance our bottom line now and for the future," Barth said. "It will allow us to become an even better place to visit."

## **Energy Grant Helps Zoo Evaluate Needs**

One key to the zoo's reflection on resource use has been an extensive energy audit, funded by a grant from the Missouri Department of Natural Resources' Rebuild America Program. In an audit of this type, virtually every energy-using piece of equipment is evaluated and compared with newer technology. In cases where newer technology is more energy efficient, the cost savings make it worthwhile to replace the older equipment. In other cases, new equipment is not needed, but very simple changes in operations can have significant impact. These are called "low-cost/no-cost" energy conservation measures.

Most buildings can easily see a 20- to 30-percent improvement in energy efficiency. With annual energy bills of nearly \$1 million, this could be a huge saving for the zoo. "The zoo has shown a rare level of commitment to this process of self-evaluation. I have no doubts that not only will their effort pay off for the environment, but it will also improve their bottom line," said Pat Justis, energy engineer for the department's Energy Center. "Almost anywhere you look in our communities you can find unnecessary energy waste that could be turned into money in the bank and result in less pollution."

While about one-third of the zoo's revenue is generated by taxes, the remainder of its operating and improvement expenses depend on earned revenues from parking lots, food service, railroad, and souvenirs, as well as from private donations. "As we study each component of our operation, whether it be solar-panel-powered energy or fuel-efficient vehicles, we will expect to solve some current energy issues and save the zoo money at the same time," says Dr. Bonner.

The total value of the Rebuild America grant is about \$32,000, which is being matched by about \$37,000 in cash and in-kind services from the zoo. The zoo will receive the grant funds only after it has implemented some of the energy audit recommendations. This helps the DNR ensure that the study actually has an energy-reduction impact.

To accomplish the audit, the zoo divided its 90-acre campus into 16 zones. It assigned staff "landlords." They are responsible for monitoring their "properties" for use of energy and possible improvements. Tim Michels, owner of Energy Solutions Inc., trained the landlords. They learned to read meters, enter information into a database, establish baselines, and analyze their findings.

Soon, the zoo will know just where its energy dollars are spent. Cutting energy use not only saves money but also decreases the burning of fossil fuels and the pollutants related to such forms of energy. Even the cleanest burning power plants emit air pollutants that fall to the ground with rain. Improving insulation, double-glazing, caulking, and sealing cracks reduces the amount of fuel needed for heating. Saving heating fuels at the zoo protects the environment by decreasing local emissions of combustion gases that are one source of city smog and greenhouse gases.

## Water Conservation Needs Critical

The Saint Louis Zoo was one of the world's first innovators in the use of water to improve the zoo experience for both the animals and visitors. Water-filled moats replaced bars as the preferred method to separate animals and people. Later, the zoo began creating "immersion exhibits," lushly planted naturalistic environments with buildings and barriers hidden. They give visitors the sense that they are actually in the animals' habitats.

Bears playfully swim. Penguins dive into icy water. Swans and ducks glide over beautiful lakes. Hippos gracefully dance underwater in the zoo's River's Edge exhibit. Some of the large water features use thousands of gallons of water per day. Drinking water is always available to animals in their cages and to humans from fountains. Cleaning and sanitation require additional water. Meeting these needs requires miles of plumbing.

The zoo asked the department's Outreach and Assistance Center for help with water saving ideas. Saving water is a double benefit for the zoo because it also billed a percentage of its water use for sewer charges. Working with the center's Environmental Assistance Office, the zoo identified and implemented a number of water-saving strategies. It also formed an enthusiastic subcommittee on water conservation. Some of the conservation ideas were:

- turning off fountains when no visitors are on the grounds,
- fine-tuning irrigation of the zoo's lush decorative plantings,
- identifying and fixing leaks in underground pipes—this has already identified a huge leak of water that was also being heated or chilled depending on the season to provide an even temperature for a display, and
- moving alligators to inside displays in winter instead of heating water for an outdoor display.

Future projects being considered include infrared testing of water mains and evaluating water-saving restroom fixtures.

## **Recycling, Source Reduction, and Sustainability**

The Saint Louis Zoo has been recycling solid wastes, fluorescent bulbs, plastic, aluminum, cardboard, paper, and batteries for the past 12 years. Recycling its old electronic equipment and collecting cell phones for reuse began in 2003. The zoo increases recycling by purposely selling some food and drinks in recyclable containers rather than disposable ones. An internal award program to recognize the recycling efforts of the employees was initiated by zoo management.

In addition to adopting more resource-friendly processes for current activities, the zoo is also giving thought to future development. Future building projects, beginning with the renovation of the zoo's 1904 Flight Cage, will reflect "green building" philosophies. A new animal nutrition center is in the design phase and officials plan to use LEED (Leadership in Energy and Environmental Design) principles to create a building that will save energy and other resources, while producing an excellent quality environment for the zoo's workers.

While no one goes to a zoo to see energy saved, water usage reduced, or trash recycled, the Saint Louis Zoo's message of resource conservation—both at home and worldwide—benefits exotic and domestic wildlife and, ultimately, people as well.