

# **Sustainability Improvement Plan**

## Lincoln Park Zoo's Comprehensive Five-Year Plan

### **Project Overview**

Lincoln Park Zoo's goal in creating a sustainability plan is to significantly reduce the zoo's negative environmental impact. A new position, coordinator of environmental initiatives (hired January 2007), has begun working with senior management and the Board of Directors to develop new policies and practices that will improve our ecological footprint. Through the conservation measures listed in this plan and collaborations with respected environmental organizations, we are striving to become environmentally sustainable and a green leader both in Chicago and amongst AZA-accredited institutions.

### **Scope of Work**

#### Evaluation & Prioritization

Evaluate current systems and determine the most prudent and cost-effective solutions for each of the five areas listed. Develop prioritized schedules for the implementation of improvements as they become fiscally and logistically feasible.

#### Atmosphere & Energy

Decrease greenhouse gas and air pollution emissions by increasing energy conservation and efficiency measures, initiating renewable energy use and emphasizing sustainable transportation choices.

#### Water

Decrease water usage by increasing conservation and efficiency measures. Manage storm water runoff.

#### Materials & Products

Increase percentage and variety of environmentally responsible products and materials used at Lincoln Park Zoo.

#### Environmental Education

Amplify the frequency and variety of environmental education efforts. Focus communication efforts on staff, volunteers and visitors.

#### Waste

Divert maximum amount of waste from landfills through source reduction, reuse, composting and recycling.

A detailed list of strategic initiatives to accomplish these goals can be found on the following pages. These initiatives will be modified as necessary to reflect ongoing changes in environmental technologies. Likewise, the Significant Accomplishments section will be annually updated.

### **Estimated Costs**

Costs for the majority of the strategic initiatives are still being determined. Cost will be an important factor in evaluating and prioritizing each environmental initiative.

Abbreviations

AH – C.H. “Doc” Searle, M.D. Animal Hospital  
AZA – Association of Zoos and Aquariums  
BH – Hope B. McCormick Bird House  
FITZ – Farm-in-the-Zoo presented by John Deere  
LH – Kovler Lion House  
LPZ – Lincoln Park Zoo  
PFCZ – Pritzker Family Children’s Zoo  
P/S – Kovler Penguin/Seabird House  
RAJ – Regenstein African Journey  
RCAA – Regenstein Center for African Apes  
SMRH – Regenstein Small Mammal-Reptile House

## ATMOSPHERE & ENERGY

### Significant Accomplishments

#### Through December 2007

- Received Partners for Clean Air Excellence Award for air pollution and emission prevention actions (9/26/06)
- Zoo-wide ComEd energy audit completed October 2006
- Natural ventilation and/or passive illumination systems decrease energy use in several buildings: LH, PFCZ, RAJ, RCAA, SMRH
- Seven green roofs reduce urban heat island effect and cool buildings in summer
  - One over AH holding area
  - One over Flamingo Dome
  - Two at PFCZ (east side of main building and bear/wolf holding building)
  - Two at RCAA (main building and lower office area)
  - One at BH—a reflective soy membrane green roof
- Employee transit benefit program (pre-tax CTA Chicago Plus Card or Metra tickets) encourages transit use over driving
  - Results from employee transportation survey indicated that one-third of respondents *never* drive to work (this is far better than average: city-wide, 50 percent of Chicagoans drive alone to work)
- Active member of Clean Air Counts
- Contestant in Chicagoland Bicycle Federation's Bike to Work Week Commuter Challenge
  - In 2007, 27 participants biked a total of 758.2 miles over the course of the week
  - If these miles had been driven instead of biked, over 900 pounds of carbon dioxide equivalents (CO<sub>2</sub>e) would have been released
- Incremental energy efficiency upgrades
  - Appropriate energy-efficient models have been identified for hand dryers, exit signs, computer monitors and lights zoo-wide
  - Purchase and installation has begun and will continue incrementally as replacements are required
- Solar installation plans
  - 1 kW photovoltaic educational display installed at FITZ
  - Engineers considering installation of LPZ's first solar thermal installation (possible location: Robert Morris College addition to AH)

**Goal: Decrease greenhouse gas and air pollution emissions by increasing energy conservation and efficiency measures, initiating renewable energy use, and emphasizing sustainable transportation choices.**

NOTE: The changes below must be sensitive to lighting, temperature and other requirements in animal areas.

Strategic Initiatives:

#### A. Evaluation & prioritization

Through research and careful analysis, determine best course of action for Initiatives B through F  
 Develop prioritized schedule for changes to occur as fiscally and logistically possible

## **ATMOSPHERE & ENERGY, continued**

- B. Energy-efficient lighting
  - Continue energy-efficient lighting upgrades
  - Where appropriate, install occupancy sensors to ensure lights are turned off in unoccupied common areas
  - Replace standard Christmas lights with LED Christmas lights
- C. Energy efficient electronics & appliances
  - Incrementally replace energy-intensive office equipment, refrigerators and freezers, washer/dryers and dishwashers with U.S. E.P.A. Energy Star qualified models
  - Address issue of phantom loads
- D. Energy efficient buildings
  - Determine where weather-stripping, energy efficient HVAC systems and other measures are needed; install as appropriate
  - Continue to install energy-saving green or reflective roofs on new and renovated buildings
- E. Initiate renewable energy use
  - Determine best renewable energy source(s) for zoo; install and implement
- F. Employee action
  - Encourage energy-saving techniques with washer/dryers, dishwashers and office equipment, including computers
  - Offer new incentives for alternative and sustainable workplace transportation choices
- G. Track, measure and quantify changes

## WATER

### Significant Accomplishments

#### Through December 2007

- Many aquatic exhibits contain water-efficient filtration/recirculation systems: Bear Line (polar bear pool); BH (Riverbanks and Free Flight exhibits); P/S (all pools); PFCZ (four of five pools); RAJ (hippo, crocodile and cichlid exhibits); RCAA (outdoor waterfall); SMRH (all 5 exhibit pools); Kovler Sea Lion Pool
- Stormwater management efforts reduce LPZ's contribution to combined sewer overflows
  - Several areas on zoo ground are covered with permeable pavers or other porous materials
  - A stormwater management system located below PFCZ's outdoor forested areas and walkways collects surface rainwater and distributes it below grade on site
  - Flora-filled green roofs absorb water, helping to reduce stormwater runoff
- Emphasis on native plants
  - Approximately 40–50 percent of garden plants at LPZ are native species, requiring less water to maintain
  - Flowers, trees and shrubs in PFCZ specially chosen to represent flora native to Illinois and the Midwest
- To establish baseline water usage, monthly meter data is being recorded (September 2007– September 2008)

### **Goals: Decrease water usage by increasing conservation and efficiency measures. Manage stormwater runoff.**

NOTE: The changes below must be sensitive to water requirements in animal areas.

#### Strategic Initiatives:

##### A. Evaluation & prioritization

Through research and careful analysis, determine best course of action for Initiatives B through G  
Develop prioritized schedule for changes to occur as fiscally and logistically possible

##### B. Water efficient exhibits

Convert remaining dump-and-fill aquatic exhibits to filtered/recirculating systems  
Repair leaks, beginning with seal pool

##### C. Water efficient bathrooms

Install water displacement systems, dual flush toilets and/or waterless urinals  
Install low-flow showerheads and faucet aerators

##### D. Water efficient landscaping

Increase use of native plants in garden beds  
Convert monoculture grass lawns into diversified, drought resistant native plant areas  
Consider collecting rain water from building roofs to use for landscaping  
Consider installation of a strategically placed, zoo-wide underground irrigation system  
Never leave sprinklers on overnight

##### E. Ensure all water fountains turn off

##### F. Stormwater management plan

Evaluate parking lot and grounds run-off  
Determine and implement best course of action

##### G. Employee action

Encourage water-saving techniques with clothes- and dish-washing machines

##### H. Track, measure and quantify changes

## MATERIALS & PRODUCTS

### Significant Accomplishments

#### Through December 2007

##### Environmentally responsible building materials

- Recycled tires used as flooring in several areas (RAJ, RCAA)
- Recycled plastic and wood waste lumber utilized for indoor exhibit bridges (BH, RAJ) and outdoor ramps (FITZ)
- Biodegradable mulch bedding in RCAA reduces waste output

##### Food service items

- Bagasse plates and bowls (paper alternative made from used sugarcane stalks)
- 100 percent recycled fiber napkins and 95 percent recycled fiber hand towels

##### Low-VOC materials

- From 2001–2006, 90 percent of paints and 95 percent of cleaning supplies met Green Seal’s low-VOC standard

##### Other

- Non-antibacterial soap used in all staff and visitor bathrooms
- Recycled papers: varieties ordered with 10 percent, 30 percent or 100 percent post-consumer fibers
- Biodegradable, polystyrene-free BioBags distributed instead of plastic bags at Spooky Zoo 2006
- Plans exist to switch to sustainability harvested coffee
- Mercury thermometers replaced with digital thermometers (completed December 2007)
- As of January 2008, 100 percent post-consumer recycled office paper is used in all office areas. This switch will annually reduce our carbon footprint by more than 11,000 pounds CO<sub>2</sub>e (equivalent to taking one car off the road permanently).

### **Goal: Increase percentage and variety of environmentally responsible products and materials purchased by and used at Lincoln Park Zoo.**

NOTE: “Environmentally responsible” is defined here as produced, manufactured, or grown in a manner that is socially and environmentally sustainable. The following are useful environmental credentials: locally produced; contains high percentage of recycled materials (particularly post-consumer waste); made from rapidly renewable resources; easily recyclable; contains minimal packaging; non-toxic and biodegradable. Whenever possible, environmental credentials should be third-party certified.

#### Strategic Initiatives:

##### A. Evaluation & prioritization

Through research and careful analysis, determine best course of action for Initiative C

Develop prioritized schedule for changes to occur as fiscally and logistically possible

##### B. Create purchasing guidelines and/or policies that take into account products’ environmental credentials

##### C. Incrementally increase/initiate purchase of the below materials across zoo departments (environmental credentials listed in order of descending importance)

- All paper and paper-based products (including paper towels, napkins and toilet tissue)—highest possible post-consumer recycled content, chlorine-free bleaching process, FSC-certified
- Benches, fences, landscape edging, picnic tables—made of recycled plastic lumber. If wood must be used, choose FSC-certified products

## MATERIALS & PRODUCTS, continued

- Carpet, construction materials, office furniture—low-VOC, made of recycled materials
  - Cleaning supplies—lowest VOC content possible, non-toxic
  - Clothing items—composed of organic cotton and/or recycled PET
  - Coffee and tea service—shade-grown, organic, fair-trade coffee; organic, fair-trade tea and sugar, bamboo stir-sticks, reusable or unbleached coffee filters
  - Deicing chemicals—choose most environmentally responsible rock-salt alternative for use on grounds and peripheral zoo property (parking lots, etc.)
  - Food items – local, organic, fair-trade, sustainably harvested products whenever possible
  - Food packaging and food wares (plates, bowls, cups, utensils)—composed of rapidly renewable materials rather than petroleum. Examples include sugar cane or palm oil waste fibers, with corn as a last-resort choice
  - Light bulbs—only energy-efficient types
  - Paints, caulk, adhesives—lowest possible VOC content
  - Plastic-based products (computer disks, trash can liners, etc.)—highest possible post-consumer recycled content
  - Retail bags—composed of either bioplastic or recycled materials
  - Retail items—sustainably produced or supporting environmental conservation projects
  - Soap—non-antibacterial/non-antimicrobial in office areas and restrooms; non-residue-producing antibacterial in areas requiring extra sanitary precautions
  - Thermometers—non-mercury
  - Writing and correction items—recycled material casing, low-VOC inks, water-based correction fluid
- D. Track, measure and quantify changes

## WASTE

### Significant Accomplishments

#### Through December 2007

##### Source reduction (i.e. waste prevention)

- All office kitchens equipped with washable coffee cups, glasses, plates, bowls and utensils
- Inter- and intra-office paper use limited
- Food service staff use washable rags to clean tables rather than disposable towels
- Graphics department routes as much as possible electronically
- Visitor areas equipped with hand drier rather than paper towels

##### Material reuse

- LPZ staff collect reusable materials for Creative Pitch, a nonprofit organization that brings art supplies to underfunded local schools
- Vets reuse plastic bags, pill bottles and a myriad of other materials
- Zoo keepers reuse paper towel rolls, boxes, bags, paper, etc. for animal enrichment
- Nutrition Center and Retail Commissary reuse wood pallets

##### Increasingly successful recycling programs

- Staff recycling program made consistent, expanded to all staff areas and promoted
- Collection of basic recyclables such as paper and aluminum has increased by an average of 556 pounds each month since July 2006. As of December 2007, approximately 16.5 tons were recycled monthly.
- Since November 2006, over 6,300 pounds of large and small electronics were recycled through new programs
- New battery and cell phone/inkjet recycling programs are provided free to zoo visitors, staff and volunteers
- Recycling program initiated for ballasts and incandescent and fluorescent light bulbs (October 2007)

##### Waste-stream quantification

- Amount and type of waste produced by various building on zoo grounds measured. This information will be used to inform changes to waste removal contract and composting decisions

### **Goal: Divert maximum amount of waste from landfills through source reduction, reuse, composting and recycling.**

#### Strategic Initiatives:

##### A. Evaluation & prioritization

Through research and careful analysis, determine best course of action for Initiatives B through H  
Develop prioritized schedule for changes to occur as fiscally and logistically possible

##### B. Source reduction

Significantly reduce office paper use in zoo office areas through GreenPrint software, increased double-sided printing and margins expansion  
Offer discount to Zoo Foods customers bringing their own coffee thermoses  
Replace paper towel dispensers in staff areas with controlled consumption dispensers or hand dryers

##### C. Reuse

Initiate item exchange webpage on intranet to facilitate trading of reusable items across departments

**WASTE, continued**

D. Composting

- Initiate secure and hygienic large-scale off-site composting of collections and landscaping materials: animal manure, used bedding, animal food prep waste, landscaping and gardening debris
- Initiate decentralized on-site composting of kitchen waste from office areas
- Initiate composting of Zoo Foods food waste, both pre- and post-consumer

E. Recycling

- Create policies *mandating* new and existing recycling programs for lights and ballasts, large and small electronic items, dry- and wet-cell batteries, spent carpet, etc. amongst contracted and regular staff
- Ensure that large events on zoo grounds have access to sufficient recycling dumpsters
- Visitor recycling—create new and expanded system on grounds to recycle paper (including visitor maps/guides), aluminum cans, plastic bottles and cups

G. Employee action

- Continually encourage recycling; inform staff how to recycle and what can be recycled

H. Track, measure and quantify changes

## ENVIRONMENTAL EDUCATION

### Significant Accomplishments

#### Through December 2007

- Environmental section added to mandatory employee orientation (October 2006–present)
- Annual South Pond Clean-up engages school groups and community members in environmental stewardship
- Edible Garden at FITZ exposes children to the core ideas of environmental sustainability through hands-on organic farming, including soil preparation, planting, weeding and composting
- Volunteer naturalist program directly engages visitors in environmental instruction
- Zoo summer camps built around strong conservation themes (July 2007–present)
- LPZ Green Guide—a wallet-sized environmental tips card— printed and distributed by the zoo (April 2007—present)
- *Green Scene* website launched mid-2007 (<http://www.lpzoo.org/green>)
- Intranet site (*Greening Lincoln Park Zoo*) launched mid-2007 to keep staff informed of greening progress
- Native plants workshops offered to zoo staff and volunteers, using gardens in PFCZ as a learning tool
- “Transit Day” informed staff about Metra, CTA and Chicagoland Bicycle Federation and encouraged alternatives to cars (June 2007)
- LPZ recognized as a “Clean Air Guardian” for our support in the Partners for Clean Air 2007 Green Pays on Green Days program
- New mobile educational cart will focus exclusively on environmental awareness and easy eco-actions (debuting May 2008)

### **Goal: Amplify environmental education efforts in both frequency and variety. Focus communication efforts on staff, volunteers and visitors.**

#### Strategic Initiatives:

##### A. Evaluation & prioritization

Through research and careful analysis, determine best course of action for Initiatives B through F  
Develop prioritized schedule for changes to occur as fiscally and logistically possible

##### B. Conservation programs

Increase number and variety of environmental education programs  
Integrate environmental themes into existing programs

##### C. Signage

Increase number and variety of environmental sustainability-minded signage  
Highlight zoo’s green efforts

##### D. Community outreach

Identify and support local environmental efforts and events

##### E. Printed materials

Include environmental updates in member publications  
Periodically revise environmental tips wallet card (“Green Guide”)

##### F. Employee education

Develop innovative methods of informing staff how to make positive green choices, encouraging action