



U.S. Fish and Wildlife Service

## Energy Showcases Do It Right!

**David Guthrie, P.E.  
Energy Coordinator**



## Energy Showcases

- ❖ NCTC
- ❖ Walnut Creek Prairie Learning Center
- ❖ Wichita Mountains Visitor Center
- ❖ Cusano Environmental Education Center
- ❖ Herbert H. Bateman Education Center
- ❖ Parker River Visitor Center

August 8-11, 2004

[www.energy2004.ce.doe.gov](http://www.energy2004.ce.doe.gov)



## Concentrate on Two

- ❖ Herbert H. Bateman Education Center, VA
- ❖ Parker River Visitor Center, MA



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



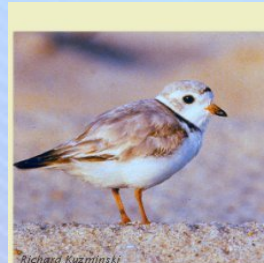
## Chincoteague NWR, VA



Home of the endangered Delmarva fox squirrel, threatened piping plover, and the famous ponies



Over 1,000,000 visitors



Adult piping plover (*Charadrius melodus*)

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Herbert H. Bateman Education Center – LEED Gold



August 8-11, 2004



## Sustainable Design

- ❖ Built using a holistic, sustainable approach
- ❖ Protects wildlife and minimizes habitat disturbance by being constructed on an already disturbed site
- ❖ Reduces backlog maintenance \$800,000 by replacing 5 old inadequate buildings

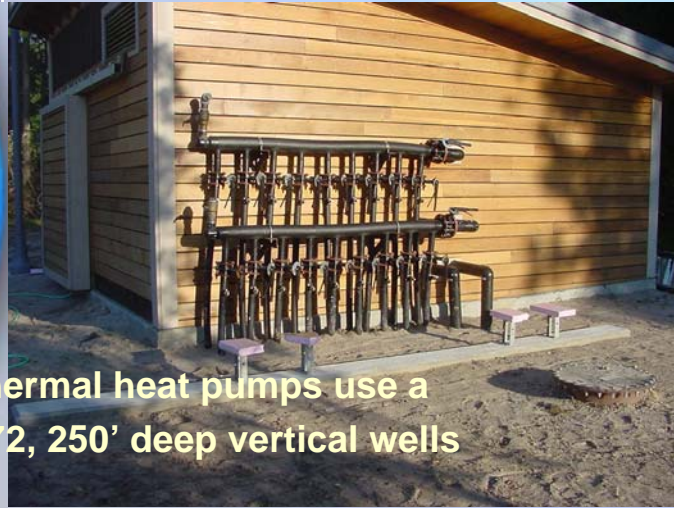


August 8-11, 2004

[www.energy2004.ce.doe.gov](http://www.energy2004.ce.doe.gov)



## Geothermal Energy



23 geothermal heat pumps use a total of 72, 250' deep vertical wells

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Energy Efficiency

- ❖ Energy-efficient and natural lighting
- ❖ Low-e windows
- ❖ Cross ventilation
- ❖ High-efficiency envelope



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Passive Solar Energy

- ❖ 90% of the Center has daylighting and scenic views.
- ❖ Passive solar energy features like sun shading are used throughout
- ❖ The Center cuts energy use by 50% compared to a typical facility



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Light Tubes



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Active Solar Energy

**15 kW solar panels rest on top of the Auditorium**



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Water Conservation

- ❖ Low-flow showers
- ❖ Low-flow faucets
- ❖ Waterless urinals
- ❖ Created wetlands for wastewater treatment
- ❖ Xeriscaping
- ❖ 2,000,000 gallons saved



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Putting Wetlands to Work



### Putting Wetlands to Work

The program, available until 2004, encourages an integrated approach to wetland restoration and energy production. It provides a framework for the development of a wetland-based energy production system that is both environmentally sound and economically viable.



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Green Technologies

- ❖ The site also uses onsite recycling
- ❖ Rapidly renewable materials for construction

recycled carpet and bamboo flooring



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Exhibits



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Parker River NWR, MA

- ❖ 240,000 visitors
- ❖ American black duck
- ❖ Nesting for the Threatened piping plover & least tern
- ❖ American kestrel
- ❖ Warbler migration in May
- ❖ Tree swallows stage Aug-Sep
- ❖ Heron and other wading birds



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)





## Parker River Visitor Center – LEED Certified

(16,000 ft<sup>2</sup>)



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)

## Habitat Restoration

- ❖ Returning disturbed land to shallow wetlands, old field, upland woods, and coastal area habitats
- ❖ Planting native species of trees, shrubs, forbs, and grasses
- ❖ Utilizing soil excavated from storm runoff cleansing basins as loam throughout the site

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Recycling

- ❖ **Recycled building materials with no or low-emissions**
  - engineered wood
  - plastic lumber
  - linoleum flooring
  - fiberboard, sheetrock
  - exterior decking, tile, deck piers, and carpet with high recycled content
- ❖ **Construction materials were recycled**
- ❖ **Non-hazardous preservative was applied to exterior, pressure-treated wood**

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Recycling Examples



← Sustainable Linoleum Flooring



↑ Recycled Tiles

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Passive Solar Energy

- ❖ Building orientation on an SE axis
- ❖ Shady overhangs
- ❖ Daylighting via clerestory windows



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Energy Efficiency

- ❖ Super insulation in building envelope
- ❖ Natural ventilation
- ❖ Energy-efficient lighting and ballasts
- ❖ Timers, self-adjusting dimmers
- ❖ 41% savings compared to traditional bldg



August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Geothermal Heat Exchange System

**Two Geothermal Wells feeding 9 heat pumps will save \$9,000 a year**

August 8-11, 2004



## Water Conservation

- ❖ **Roof runoff discharges onto grassy swales or into underground percolating chambers, recharging local aquifers**
- ❖ **Low-flush toilets**
- ❖ **Low flow faucets and showerheads**



August 8-11, 2004

[www.energy2004.ce.doe.gov](http://www.energy2004.ce.doe.gov)



## Partnerships

- ❖ Commonwealth of Massachusetts (contributed \$1,000,000)
- ❖ State Park staff
- ❖ The City of Newburyport
- ❖ Cambridge Seven Associates
- ❖ Massachusetts Audubon Society
- ❖ The Society for the Preservation of New England Antiquities
- ❖ Friends of Parker River Refuge

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)



## Outreach

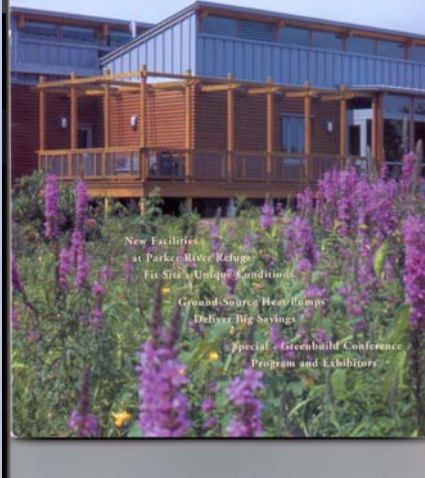
- ❖ Exhibits explaining the benefits of the facility's sustainable features
- ❖ Special interpretive exhibits that show good stewardship of the land
- ❖ Seminars to explain the Center's green building architecture and energy efficiency

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)

2004  
Energy

winter 2003  
eco-structure  
Improving environmental performance of the building envelope through education & design



New Facilities  
at Parker River Refuge  
Fit Site's Unique Conditions  
Ground-Source Heat Pumps  
Deliver Big Savings  
Special - Greenbuild Conference  
Program and Exhibitors

August 8-11, 2004

[www.energy2004.ee.doe.gov](http://www.energy2004.ee.doe.gov)