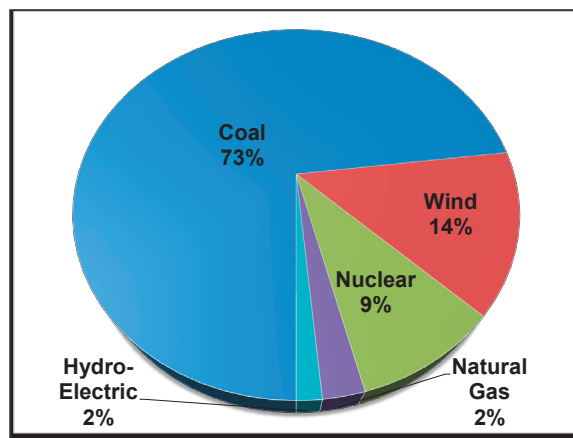


Energy in Iowa



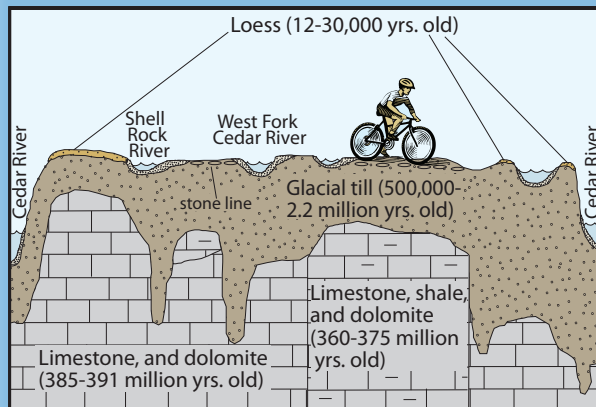
Where does Iowa's electricity come from? The above pie-chart shows that Iowa, like many other states, is dominated by coal energy. Coal from Wyoming accounts for about 73% of electrical power generation. This despite the fact that Iowa has abundant coal resources within its borders – none of which are currently mined due to high sulfur. Iowa's sole nuclear power plant generates 9% of the state's energy, and Iowa is a national leader in wind energy at 14% (instituteeforenergyresearch.org)

Iowa is the nation's largest producer of corn-based ethanol. While not used to generate electricity, ethanol is mixed with gasoline for automobiles. Iowa mandates that 25% of motor fuel come from renewable sources by 2020.

Iowa is also a leader in harnessing energy from the ground, called geothermal energy. In Iowa, geothermal systems use the relatively constant ~55 ° F temperature of the earth, and can cut household heating and cooling costs by over 50%. Most common geothermal systems are "closed loop", in which a fluid is circulated through underground heat-exchange tubes. Less common are "open loop" systems, which withdraw water and discharge it to a stream or pond. Black Hawk County alone has over 50 open loop systems servicing schools, homes, and businesses.

COVER PHOTO: Lodge At Heery Woods State Park.

Day 5 Milestones



Start: Charles City

Heery Woods State Park: mile 20

West Fork Cedar River: mile 33

Johnson Creek: mile 40

Beaver Meadows Park: mile 41

Black Hawk Creek: mile 68

Finish: Waterloo - mile 77

For More Information...

on energy statistics for each state:

www.instituteeforenergyresearch.org

The U.S. Energy Information Administration has independent statistics and analysis on energy production and use in each state. More information on Iowa's energy can be found at: www.eia.doe.gov/state/state_energy_profiles.cfm?sid=IA

Find out about Heery Woods and many other Butler County Parks at:

www.butlercountyiowa.com/parksandcamping.htm

Up-to-the-minute information on all of Iowa's 171 stream flow gages can be found at:

<http://waterdata.usgs.gov/ia/nwis/current/?type=flow>

RAGBRAI 2010

Learn about the Land

Thursday, July 29

Day 5



Iowa DNR – Geological and Water Survey

109 Trowbridge Hall
Iowa City, IA 52242
www.igsb.uiowa.edu

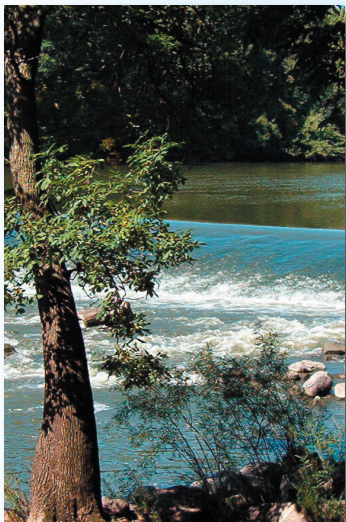
US Geological Survey - IA Water Science Center

400 S. Clinton St.
Iowa City, IA 52240
<http://ia.water.usgs.gov>

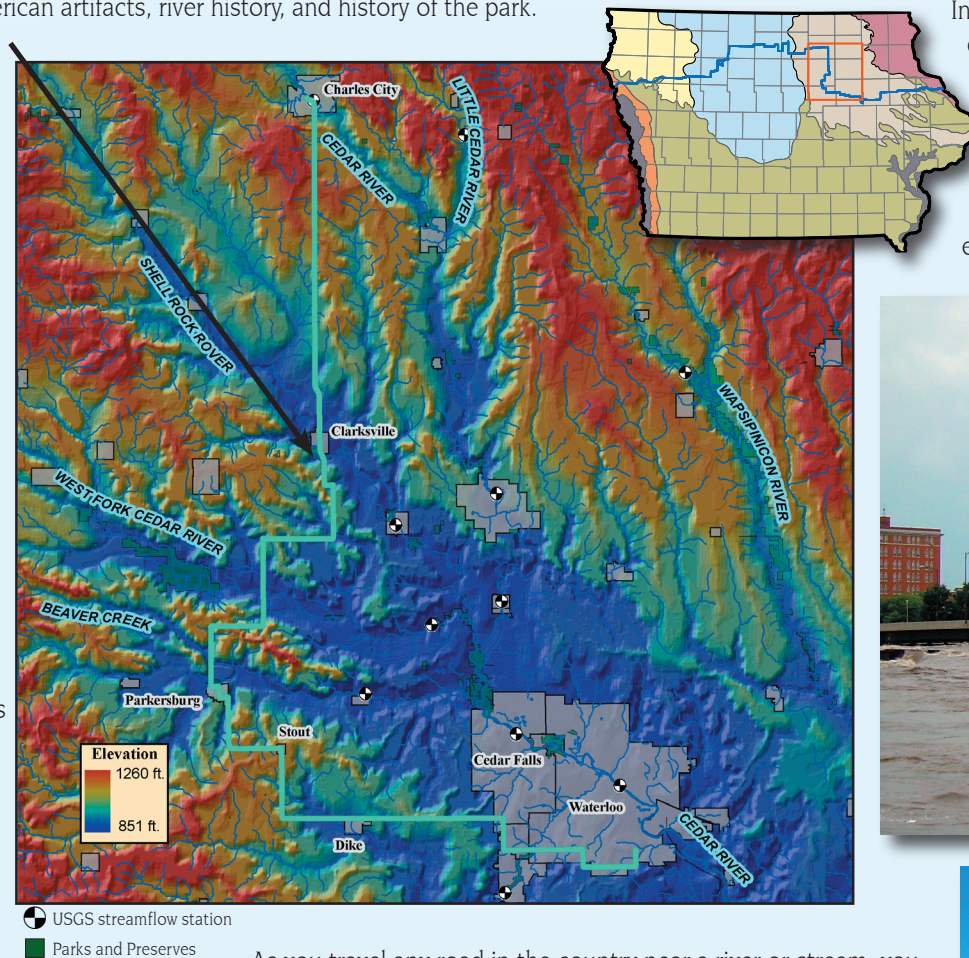
Iowa Limestone Producers Association

5911 Meredith Dr.
Des Moines, IA 50322
www.limestone.org

Just south of Clarksville, about a third of the way through today's ride, you'll be biking through **Heery Woods State Park & Nature Center**. This county-run state park serves as the center for environmental and outdoor recreation in Butler County, and originally was land that belonged to the first settlers in the region (photo below courtesy of Steve Martin - Butler County Conservation Board). Heery Woods offers camping, fishing, boating, and hiking, and was recently renovated in 2005 with a newly paved bike trail! The park's Nature Center is designed around the theme "This is your Heritage," and has visual and hands-on exhibits covering prairies, wetlands, and forests. You can also learn about the cultural history of the area through exhibits on Native American artifacts, river history, and history of the park.



Charles City and Waterloo have a history of manufacturing facilities improperly disposing of wastes leading to **hazardous waste sites**. In Charles City, from 1953 to 1977, a manufacturer of veterinary pharmaceuticals improperly disposed of sludge, which contaminated groundwater and ultimately the Cedar River. However, successful mitigation of the problem led to removal from the EPA's "Superfund" site list in 1993, although the current site owner continues to sample monitoring wells and the river. In 2003, the City of Waterloo assessed that volatile organic compounds (VOC) used in manufacturing processes at a facility may have entered the ground water through spills. The City of Waterloo and EPA are concerned that VOCs could seep through building foundations into indoor air. The problem has yet to be mitigated, although the facility owner has been ordered to engage in a series of remedial actions to clean up the contamination.



As you travel any road in the country near a river or stream, you have probably seen small buildings with a USGS sign that are topped by solar panels and satellite dishes (photo right). These buildings are part of the **USGS national streamgaging network**. The USGS operates approximately 7,500 gages, 171 in Iowa. The data collected are used by a variety of public and private users such as government agencies, researchers, and recreational enthusiasts. Traditionally, the public is most aware of these gages during times of flooding when the National Weather Service relies on streamflow information to help make flood predictions.

Today, you'll be biking through the Cedar River watershed, one of the areas hit hardest by the **Iowa flood of 2008**. In Charles City, the Cedar River was over flood stage for a week, reaching a new all-time record of 13 feet above flood stage with more than 34,000 cubic feet of water per second (cfs) rushing past the USGS streamgaging station. In Waterloo, the river exceeded the flood stage for 13 days (photo below). At one point, the river level was over 15 feet above flood stage with a flow of 112,000 cfs. Think of one cubic foot as the size of a basketball – 112,000 basketballs flowing past you every second! Because of issues with flood prevention, the Cedar River was recently added to a "Top 10 Most endangered Rivers in America" list at number 5.

