

Greening Yellowstone



To ensure that Yellowstone is still here for future generations to enjoy, we must not only preserve what makes this place so unique and special but also strive to do more—and do better—by making the park more environmentally sustainable.

*Suzanne Lewis
Superintendent
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YES! Yellowstone Environmental Stewardship

Yellowstone Environmental Stewardship (YES!) is a multi-year initiative and action plan designed to achieve significant greening and sustainability goals by 2016, the 100th anniversary of the National Park Service. Through the coming years, Yellowstone will further reduce its ecological footprint, increase operational efficiencies, and better preserve park resources for future generations.

In 2008, Yellowstone National Park launched the “Yellowstone Environmental Stewardship (YES!) Initiative” along with its fundraising partner, the Yellowstone Park Foundation (YPF). The park worked with YPF to identify projects where private support from individuals, foundations, and corporations can make a difference and accelerate progress. Twenty-six YES! projects, together with other park programs already in place, will achieve the following goals by 2016:

- reduce greenhouse gas emissions by 30%
- reduce electricity consumption by 15%
- reduce fossil fuel consumption by 18%
- reduce water consumption by 15%
- divert 100% of solid waste from landfills

Tapping Expertise and Innovation

Assembling experienced staff to implement YES! projects is the key to their success. The Yellowstone Park Foundation has entered a multi-year partnership with the renowned Georgia Tech Research Institute to provide environmental engineering expertise and on-the-ground support. Each summer a team of Georgia Tech specialists helps the park develop the YES! projects. An undergraduate intern, graduate researcher, and scientist work together on tracking databases, developing modeling project scenarios, and explaining to employees and visitors how they can make a difference.

In 2008, one of the Georgia Tech team’s first projects was to develop a database to report energy, stationary, and mobile fuel use by area within the park, by concessioners, and by year. The database is available online and allows park and concession managers to track energy and fuel use trends and overall progress.

To begin this project, the intern helped develop a pilot project at the park’s administration building in Mammoth Hot Springs to track real-time energy consumption, which directly involved employees with energy conservation. The intern also began working on recommendations for annually reporting sustainability accomplishments by the partners in this effort.

With financial support for the intern program from longtime YPF partner **Canon U.S.A., Inc.**, the Georgia Tech team is helping the park expand the energy consumption pilot to buildings throughout the park. In addition, the team will focus on water conservation projects and help lay the groundwork for future initiatives.

Conserving Water

Yellowstone uses 285 million gallons of drinking water each year. Through the YES! Initiative, the park will implement two programs to reduce water consumption in the park by 16 million gallons and save roughly \$125,000 annually.

Efficient Irrigation

One program aims to modernize an irrigation system that must be maintained as part of a historic district. Yellowstone’s headquarters at Mammoth Hot Springs were developed by the U.S. Army more than a century ago. A visit to this neighborhood is like a trip back in time. Imagine soldiers on horseback practicing maneuvers; imagine the dust! To reduce the dust, the Army planted lawns of Kentucky bluegrass—lawns that require extensive irrigation. Removing these 15 acres of lawn is not an option: Yellowstone must preserve them as part of the Fort Yellowstone National Historic Landmark District.

YES! continued

The existing irrigation system is more than 25 years old; it requires constant manual adjustments to the timing and amount of water needed. The system wastes water in many ways, such as watering during a rainstorm.

The Yellowstone Park Foundation (YPF) has partnered with **Rain Bird**, the leading manufacturer of irrigation products, to replace the old system with a new, “smarter” system. The new system will use timing devices and moisture sensors to gauge current climate conditions, which will lead to more efficient irrigation and water savings.

Water Metering

Knowledge is a key to improving sustainability, and Yellowstone needs to know more about its current water use patterns. The second water conservation program will provide that information using real-time water meters to map the park’s daily water consumption. **Unilever**, a longtime YPF partner, is providing a generous grant to purchase these meters. The park also intends to use the meters to educate employees and visitors by showing them how simple measures can conserve our most precious resource.

Energy Conservation & Alternative Power

In 2007, Yellowstone consumed 26.8 million kilowatt hours of energy, costing \$3.1 million. With the help of the YES! Initiative, the park will reduce this energy consumption by implementing new technologies such as solar and micro hydropower (*see last page*); installing high-efficiency appliances, equipment, lighting fixtures and sensors; and initiating an energy education program. In addition, it will also install electric meters to improve the park’s ability to track energy use.

Yellowstone plans to build on its successful use of solar arrays, which have existed for many years at the Lamar Buffalo Ranch and the Lewis Lake Contact Station. With the Yellowstone Park Foundation’s support, Yellowstone will phase in solar electricity and hot water technology at many other park locations for an annual savings of 450,000 kilowatts and \$170,000.

Yellowstone is also streamlining office practices to save energy and paper. Volunteer consultants from **Canon** recently analyzed the park’s existing office systems and document workflow. They recommended reductions in energy consumption and waste, suggesting steps for lowering cost-per-copy, and improving workplace efficiency. Then, they donated the upgraded office equipment needed to implement the improvements.

Transportation

Maintaining Yellowstone National Park and serving its three million annual visitors requires hundreds of employees, many of whom must travel vast distances to perform their duties. Yellowstone has addressed these transportation challenges by experimenting with a variety of fuels in its fleet and by encouraging carpooling.

Yet Yellowstone still needs to reduce the total number of miles driven per person and to improve the fuel efficiency of its fleet. Through the YES! Initiative, the park will strive to reduce fuel consumption by 18 percent by 2016.

Alternative Vehicle Technologies

Yellowstone has converted all its fleet fueling stations to alternative fuel blends. It also saves fuel by using hybrid vehicles, such as the nine Prius and Camry models donated by **Toyota Motor Sales, U.S.A., Inc.**, through the Yellowstone Park Foundation.

These successful fleet enhancements have led Yellowstone to set ambitious goals for replacing older vehicles with more hybrid vehicles or those using alternative fuels. This will be expensive at first, but saves money in the long run by increasing fuel economy. It also provides a priceless opportunity to inform visitors about greenhouse gas emissions.

Fuel-Efficient Tires

The tread on tires enables cars to grip the road, and until recently, this was the primary consideration when purchasing tires. Today, other technological advances in tire design, such as low-rolling resistance tires, improve gas mileage and save fuel. In 2008, **Michelin North America** donated their new high-tech tires to test on six of the park’s heavy trucks. Rims required for these new tires were donated by **Alcoa Wheel Products**. During nine months, the trucks’ fuel savings averaged 23.4 percent—more than 4,000 gallons of fuel. The six trucks also reduced carbon dioxide emissions by more than 44 metric tons.

In addition to contributing to a greener, cleaner planet, the fuel savings translate into dollars saved that can be put toward efforts such as wildlife conservation, visitor education, and historic preservation in the park.

In addition to the efforts highlighted in this supplement, the YES! Initiative encompasses projects to achieve waste reduction and improve green purchasing in Yellowstone. Visit the Yellowstone Park Foundation online to learn more about these activities: www.ypf.org/YES

What you can do—Lawns

Save water—and possibly money—with these tips:

Don’t drown The greatest waste of water comes from applying too much, too often—more than your lawn is able to absorb. Instead of one long session, water a few times for shorter periods.

Watch the clock Water between 5 and 10 AM, when the sun is low, winds are calm, and temperatures are cooler. Sun, wind, and heat evaporate and waste water.

Water only things that grow Adjust sprinkler heads to avoid watering sidewalks and driveways, and make sure that water droplets are big enough to hit the ground instead of evaporating into the air.

Consider dripping When it comes to watering individual trees, flowerbeds, potted containers, or other non-grassy areas, consider applying water directly to the roots using low volume drip irrigation. This will reduce water waste through evaporation or runoff.

Be rain smart If you have an automatic sprinkler system, adjust it as the seasons and weather change. Or better yet, install a shut-off device that automatically detects rain or moisture. These devices are inexpensive and enable you to take advantage of the water without having to pay for it.

These tips are courtesy of Rain Bird



Fueling Yellowstone

- Yellowstone National Park is huge! It’s larger than the states of Rhode Island and Delaware combined.
- Visitors and employees use more than 466 miles of roads.
- Employees use a fleet of 566 cars and trucks, which used 394,000 gallons of biodiesel and ethanol-blended fuel in 2008.

Other Greening Efforts in Yellowstone



Old Faithful viewers stand on plastic lumber made from the equivalent of three million recycled plastic milk jugs. Unilever donated the lumber.

Recycling in Yellowstone

In 2008, the park and its concessioners kept 79 percent of the park's waste out of landfills. Last year, the park recycled:

- 119 tons of newspapers, office paper, and magazines
- 22 tons of aluminum and steel
- 318 tons of glass
- 44 tons of plastic containers
- 278 tons of cardboard
- >13,000 small propane cylinders, using a machine developed by a Yellowstone park employee and funded by the Yellowstone Park Foundation
- 150 tons of tires

Cleaner Travel

- Yellowstone National Park's vehicle fleet includes 17 hybrids. This conversion began in 2004 when **Toyota** donated four Prius hybrids.
- Dodge Truck, Inc. donated a three-quarter ton 4x4 pickup to Yellowstone in 1995 to test 100% biodiesel fuel. It has been driven more than 195,000 miles and averages 17 miles per gallon with less smoke, hydrocarbons, nitrogen oxides, and carbon monoxides emitted in the exhaust.
- All diesel-powered vehicles driven by park employees and many used by concessioners run on a 20% blend of industrial-grade vegetable oil and diesel.
- Yellowstone uses an ethanol blend in all gasoline-powered park vehicles and is the first national park to sell ethanol-blended fuel to visitors at public service stations.
- More than 40 employees participate in a Ride-Share program, commuting in a park-sponsored bus up to 100 miles a day.

Right: Recycling bins are located in campgrounds, near visitor centers, and other places in the park.

Far right: This ¾ ton 4x4 truck, donated by Dodge Truck, has been running on 100% biodiesel fuel since 1995.



In 1997, when Yellowstone National Park celebrated its 125th anniversary, park employees asked themselves, *What can we do to preserve and protect this national treasure for the next 125 years?* The answer was “The Greening of Yellowstone,” with emphasis on waste management, alternative fuel use, and energy conservation. Some “green” projects had already begun, such as demonstrating the use of bio-diesel fuel in the park's fleet. Other projects started, such as replacing toxic cleaning products with those safe for people and the environment. Greening efforts like these have since expanded into many other national parks, and involve many partners in Yellowstone and the region.

Yellowstone Environmental Coordinating Committee

This new committee is comprised of park concessioners, the park's cooperating association, and the National Park Service. Its goal is to develop innovative and cooperative solutions to parkwide environmental issues. Examples of work underway include:

Yellowstone Association

- Uses compact fluorescent lighting, recycled carpeting, and sustainably grown wood in new book stores.
- Incorporates sustainability messages in its Yellowstone Association Institute educational programs.

Delaware North

- Eliminates hazardous materials and waste where possible.
- Remodels stores with environmentally sustainable materials.

Xanterra Parks & Resorts

- Replaced boat and snowmobile engines with cleaner and more efficient engines.
- Uses bleach-free paper with 100% post consumer content for most printing projects.

Yellowstone Park Service Stations

- Installed credit card pumps at all facilities, which protect the environment by adding containment sumps under fuel dispensers and all double wall pipes.
- Recycles tires, vehicle batteries, used oil, used oil filters, propane cylinders, all metals, glass, plastic bottles, used electronic items, cardboard, magazines, paper, etc.

Medcor

- Switching to low energy fluorescent bulbs in all fixtures as incandescent bulbs burn out.
- Computerizing documentation to decrease or eliminate paper charts and billing processing.

What you can do in Yellowstone

Bag it Shopping for supplies or souvenirs at one of the park's gift shops or general stores? Take a reusable shopping bag or purchase one there to use at home as a reminder of your trip.

Recycle In Yellowstone, you can recycle glass, cans, paper, cardboard, most plastic bottles, magazines, small batteries, and even the propane canisters from your camp stove or lantern. Check the map on the back page of the park newspaper for general park locations, then inquire locally.

Check your tires Keep your tires properly inflated to improve your car's fuel efficiency.

Drive more efficiently Observe the park's posted speed limits, and avoid rapid acceleration and excessive braking.

Turn it off If you are staying at a lodge or cabin, be sure to turn off the lights and turn down the heat when you leave to go sightseeing.

Walk Make an effort to do more sightseeing on foot, instead of from your car, and don't let your car idle while parked.



Did you know?



Snow plowing sucks up fuel

Snow removal in Yellowstone is the largest and most complex operation in the National Park Service. Every year, tons of snow must be removed from roadways for the park to open in the late spring. In 2008, 36,000 gallons of biodiesel were used in snow removal—costing more than \$150,000! The increased use of alternate fuel technologies will help reduce this environmental and budget impact.

Yellowstone composts more than 60% of its trash

Yellowstone National Park has long been at the forefront of responsible waste management. The park helped establish the region's first recycling cooperative, Headwaters Cooperative Recycling, in 1994. It also collaborated in building an industrial-grade composting facility just outside the park, which has been operating since July 2003. In 2008, the park collected more than 2,000 tons of recyclables and transformed more than 60% of its garbage into compost.

Yellowstone is building a "green" visitor education center

In 2010, Yellowstone will open the doors of a new, state-of-the-art Old Faithful Visitor Education Center. With support from the Yellowstone Park Foundation, **Toyota**, **DuPont**, **Unilever**, The Coca-Cola Company, and ConocoPhillips, the park has set a goal to receive Gold level designation of Leadership in Environmental Engineering Design (LEED). This will make the building one of the few visitor centers in the National Park Service to demonstrate this level of commitment to environmentally friendly building design and function.

Yellowstone is a leader in improving lighting design and technology

To reduce "light pollution"—nighttime glare produced by artificial lights that obstruct the night sky—the park and the Yellowstone Park Foundation worked with General Electric Corporation and the O.P. & W.E. Edwards Foundation to design and install "dark sky" lighting fixtures at Old Faithful and Lake Village. *(The photo at left shows a fixture being assembled.)* Next time you're lodging or camping at Old Faithful or Lake, be sure to take a peek outside to see the starry results.

American Reinvestment and Recovery Act (ARRA) funds "green" projects

Yellowstone National Park will receive \$19,000,000 in funding from the American Recovery and Reinvestment Act of 2009, also known as ARRA. Projects include installing a new micro hydropower system to harness power from drinking water already stored for use. (A century ago, a micro hydro system generated electricity for Mammoth Hot Springs; it was taken out of service long ago.) This clean power source will reduce the annual greenhouse gas emissions by 695 tons and save the park approximately \$80,000 in electric bills each year. The park will also be replacing some older vehicles with new, fuel-efficient models.

The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased and not impaired in value.

Theodore Roosevelt, 26th President of the United States



Yellowstone was the first national park to recycle the propane cylinders used with campstoves and lanterns. More than 13,000 cylinders are recycled each year.



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Canon



RAIN BIRD



Their support of the Yellowstone Environmental Stewardship (YES!) Initiative is integral to the success of the sustainability efforts.



The nonprofit Yellowstone Park Foundation has been Yellowstone National Park's official fundraising partner organization since 1996. The Foundation works in cooperation with the park to fund projects and programs that protect, preserve, and enhance the natural and cultural resources and the visitor experience of Yellowstone. The Foundation receives no annual government funding; it relies instead upon generous contributions from private citizens, foundations, and corporations to help ensure that Yellowstone's great gifts to the world will never diminish.

Learn more at www.ypf.org

Yellowstone National Park
www.nps.gov/yell

National Park Service
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