



Sustainable Operations

“Sustainability is about planning and carrying out our day-to-day work with full consideration of how environmental factors affect long-term goals. It means eliminating waste and developing energy flows and cycles that comport with natural processes... applying sustainable development principles throughout society lowers long-term maintenance and operating costs and improves the quality of life.”

Rethinking the National Parks for the 21st Century
A 1999 Report of the National Park System Advisory Board



John Muir and President Theodore Roosevelt in 1903



Mariposa County composting facility turns garbage into landfill cover



Solar array on the NPS operations complex in El Portal



Hybrid shuttles in the park

With a rich history of conservation ethics, it should come as no surprise that Yosemite National Park has made sustainability a part of daily life and operations. These actions help address concerns such as global climate change, protection of the park resources, and the visitor experience. It also translates into good economic sense. Yosemite and its park partners cooperate in finding sustainable solutions:

- **HYBRID SHUTTLE BUSES:** The National Park Service purchased 18 hybrid electric-diesel shuttle buses in 2005 to replace the pre-existing fleet of 1986 diesel buses. These shuttle buses provide free transportation to park visitors, and were chosen based on low-emissions, low-noise, and fuel-efficiency. Park concessioner Delaware North

Companies Parks & Resorts at Yosemite Inc. (DNC) provides for their maintenance and operation.

- **CANOLA-BASED & RE-REFINED OIL:** In order to minimize pollutants, all of the hydraulic fluid used by the National Park Service (NPS) and DNC is canola-based. Canola-based bar oil is also used for chain saws and winch cables in the park. Park vehicles use 100% re-refined oil as a high-quality, environmentally-sensitive lubricant in 750 vehicles and pieces of equipment. Additionally, oil filters are drained, crushed and recycled.
- **FUEL EFFICIENCY:** Alternative fuel and hybrid vehicles are replacing pre-existing park service vehicles, bringing the park's fleet to over 40 alternative fuel vehicles. With the support of the Yosemite Fund,

the park also reduced required helicopter-rappel training flights—and their respective fuel use and noise levels—by 50% with the installation of a training tower. The tower was built out of re-used steel, another “green” feature.

- **COMPOSTING & RECYCLING:** Yosemite partnered with Mariposa County and DNC in 2000 to build a composting facility in Mariposa County. The organic material is separated out and used as landfill cover which extends the life of the landfill from 7 to 15+ years. Tires used in the park's fleet are recycled so that no tires go to the landfill—this is 50% less expensive than landfill disposal. Carpets are made from recycled plastics, and there is parkwide recycling of paper, plastics, glass, and aluminum.

Sustainable Operations

- **SOLAR PANEL ARRAY:** A partnership with the Department of Energy, the State of California, and Bonneville Power Administration (BPA) has brought solar power to the operations complex in El Portal. A second photovoltaic project, assisted by BPA, is located atop the El Portal Waste Water Treatment facility. Thanks to these efforts, the El Portal complex is saving approximately 5000 kWh per month in reduced electricity costs. Additionally, park housing units are fitted with solar panels on their roofs.
- **ENERGY MANAGEMENT:** Park managers select new equipment based in part on energy efficiency, using “Energy Star” products for heating, lighting and appliances. An energy-saving variable drive pump motor is also used for the sewer lift station. Additionally, the park is transitioning to the use of compact fluorescent lighting to save energy.
- **PASSIVE HEATING & COOLING:** A ground source heat pump in the Curry Village employee housing utilizes the near-constant temperature of the earth for heating and cooling of the buildings. Besides its environmental benefits, it results in low heating and cooling costs. Additionally, this system uses 40 times less water than a conventional system.
- **GREEN BUILDINGS:** Both the new Resources Management & Science building in El Portal and the Curry Village employee housing complex use green building standards for water efficiency, energy and atmosphere standards, materials and resources standards, indoor environmental quality, and innovative design process standards. Green building materials such as cement fiber shingle siding, sustainably harvested wood flooring, and recycled content carpet helped save natural resources. The Curry Village employee housing also reduced light pollution to preserve dark night skies by using ultra-low light level and directed lighting fixtures. Any new construction will adhere to these same standards or better, and old buildings will gradually be converted.
- **AIR POLLUTION BASELINE EMISSIONS INVENTORY:** In order to more effectively prioritize our efforts to reduce greenhouse gas and other air pollutant emissions, a preliminary inventory was completed in 2005 using the Climate Leadership in Parks (CLIP) tool. Improving and expanding this inventory to account for fire and other natural processes is an ongoing research priority for park resource management and science staff.
- **RECLAIMED WATER :** Reclaimed water is used to irrigate the El Portal operations complex.
- **CLEANING PRODUCTS:** The park has been eliminating solvent cleaners by using water-based cleaners.
- **YOSEMITE LODGE DECONSTRUCTION:** Instead of demolishing 200 flooded buildings and disposing of the materials at a landfill, a large majority of these flooded buildings were recycled through the deconstruction process. Wood debris was sent to a co-generation plant to produce electricity (enough electrical power was produced to supply an energy efficient home for 51 years!). The first phase of this project was completed for \$125,000 (less than 1/2 the average contractor bid of \$300,000) demonstrating how salvage and reuse reduces waste and cost. This project was the recipient of a Department of Interior “Closing the Circle” award.

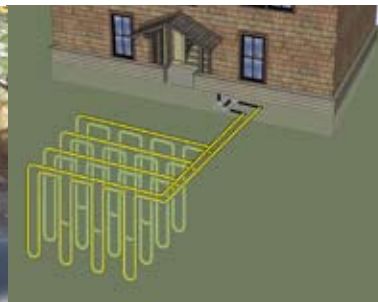
While Yosemite is proud of the steps taken to “green” park operations, there is more work to be done. Park staff will continue to highlight sustainable plans and progress as we move forward.



Earth Day features local organic, vegetarian fare sponsored by DNC



Ford donated this electric “Think” vehicle to add to the park’s alternative fleet.



Curry employee housing utilizes a ground-source heat pump



Volunteers cleaned 182 miles of roadway, over 80 miles of trail and more during the 2007 “Yosemite Facelift,” sponsored by Yosemite Climbing Association.

Partners do their part

The National Park Service is not the only one initiating sustainable operations—park partners are also doing their share. The park concessioner, Delaware North Parks & Resorts at Yosemite, Inc (DNC), Yosemite Institute, Yosemite Association, and the Yosemite Fund are all helping to “green” the park.

DNC & GREENPATH: In addition to the NPS collaborations already described, DNC utilizes an award-winning environmental management system called GreenPath (www.delawarenorthgreenpath.com) which adheres to the environmental management standards put forth by the International Organization for Standardization (ISO 14001). Its goal is to reduce waste, increase recycling, and “make a positive environmental contribution to communities.” Some of the highlights include:

- **Waste Management:** DNC’s Waste diversion program is one of most extensive in California and has been recognized by the state’s Integrated Waste Management Board as one of the best programs for 13 consecutive years. Among other achievements, DNC recycles 33 different materials, diverts 13 additional materials through reuse and organic waste diversion, maintains over 100 drop-off locations parkwide, and operates 2 recycling centers.
- **Cleaning Green:** DNC has replaced virtually all toxic cleaning products with non-toxic, bio-degradable products.
- **In The Kitchen:** Many of the food service operations use organic and sustainable food products including free range beef, antibiotic and hormone free pork, organic turkey and fish that is approved by the “Monterey Bay Seafood Watch” program. DNC also partners with local organic farmers. Additionally, more than 25 tons of DNC’s used kitchen grease is processed into Biodiesel fuel annually.

- **Lighting Retrofit:** All lodging and housing units within the park went through a lighting retrofit in 2007 which is expected to result in a 30% reduction in electricity usage. This was made possible through a grant from PG&E through the Lodging Savers programs.

- **Transportation:** Besides utilizing re-refined oil in their vehicle fleet, DNC is currently testing a B-20 bio-diesel fuel product. A bike reuse program has also been implemented, allowing DNC management to travel by bike around Yosemite Valley.

YOSEMITE INSTITUTE (YI)

- **Energy Management:** YI has replaced all incandescent lighting with Compact Fluorescent lighting in the office, campus, and staff housing units, installed programmable thermostats in its facilities, and installed motion sensors and timer switches for light fixtures.

- **Green Purchasing:** It’s a priority for YI to purchase the highest available recycled content in its office products. Materials used in facilities repairs or upgrades are assessed for their “green” attributes. They purchase local goods whenever possible, reducing food packaging, and are increasing the use of organic products.

- **Staff Initiative:** YI staff have organized a carpooling system, are being trained to raise awareness of conservation techniques, and are creating awareness with students about food waste.

- **Operations:** YI is heading towards a paperless office by adopting electronic

documents and manuals wherever possible. A waterless urinal has been installed on campus and a solar hot water heater in staff housing.

YOSEMITE ASSOCIATION (YA)

- **Publications:** YA prints publications on 100% post-consumer waste paper using chlorine-free process and printed with soy-based inks.

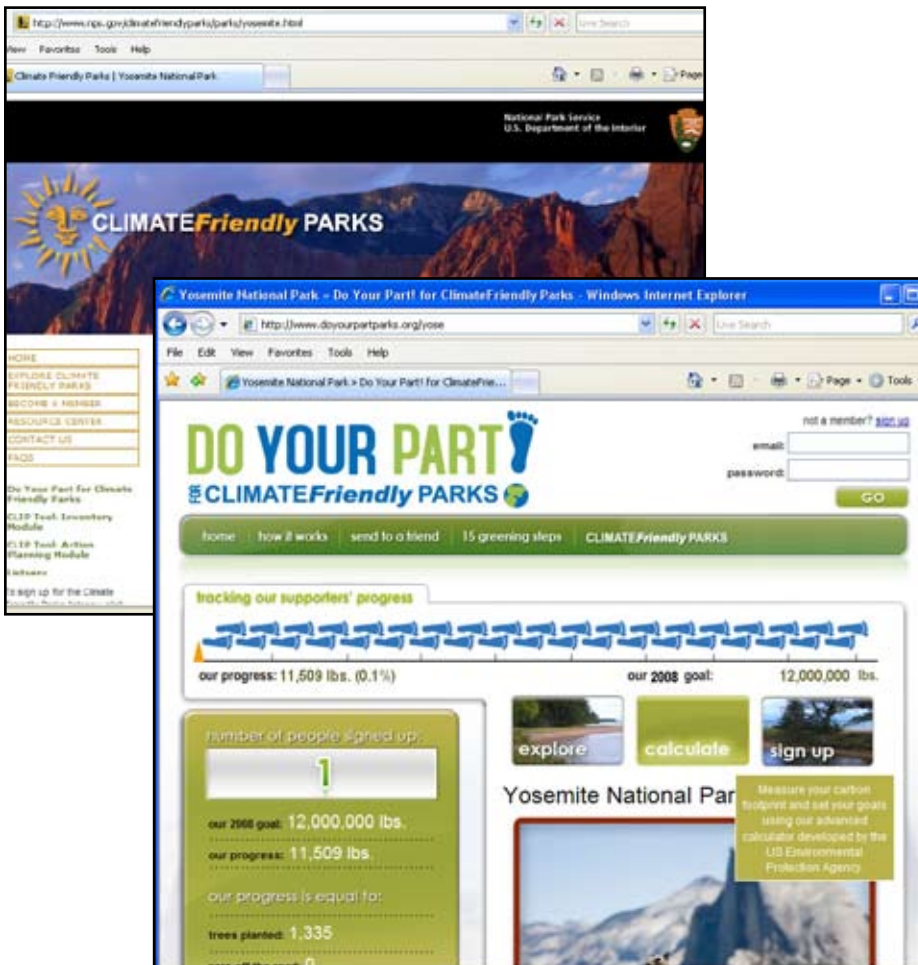
- **Green Building:** Renovation of the Valley Visitor Center bookstore was done to Leadership in Energy and Environmental Design (LEED) Green Building standards including the use of Forest Stewardship Council (FSC) certified wood, locally quarried granite, and recycled tire material.

- **Recycling:** Employees reduce, reuse, and recycle in operations including the use of compostable “packing peanuts,” reusing shipping boxes, environmentally-friendly cleaning products, and recycling.

YOSEMITE FUND

The Yosemite Fund is a major supporter of sustainable park projects. In addition to funding the rappel tower detailed previously, the Fund has supported many other “green” projects including the addition of solar panels for the Mariposa Grove Museum, Hispanic Community Connection packaging printed on chlorine-free, recycled paper using soy-based inks, and the utilization of recycled granite on the Yosemite Falls project. Additionally, the Fund has supported wildlife studies that are useful to understanding climate change.

What can you do?



YOU CAN HELP YOSEMITE MEET ITS CARBON REDUCTION GOAL! America's national parks, because of their unique, protected resources, are particularly vulnerable to climate change. Yosemite has already recorded plants and animals moving to higher elevations, an increase in wildfires, and a decrease in glaciers and snowpack.

The National Park Service, in partnership with the Environmental Protection Agency and National Parks Conservation Association, have launched www.DoYourPartParks.org. Do Your Part for Climate Friendly Parks is a new online program that empowers visitors to reduce their carbon emissions and thereby help to protect America's national parks from the impacts of climate change.

LEAD THE WAY TOWARDS A SUSTAINABLE FUTURE BY PLEDGING TO REDUCE YOUR CARBON FOOTPRINT AT:
www.DoYourPartParks.org

STEP 1: PICK A PARK. Choose among the participating national parks, each of which has set goals to reduce the carbon footprint of visitors and employees in the park.

STEP 2: SIGN UP. Create a personal profile that will be linked to your carbon footprint and the park of your choice.

STEP 3: CALCULATE & PLEDGE. Calculate your carbon footprint by entering basic information about your household's energy needs. Then pledge to reduce your carbon footprint.

THE AVERAGE AMERICAN TODAY USES ENOUGH ENERGY TO RELEASE ABOUT 50,000 POUNDS OF CARBON DIOXIDE—THE MAJOR CONTRIBUTOR TO GLOBAL WARMING—PER YEAR. HERE ARE SOME STEPS YOU CAN TAKE TO REDUCE YOUR CARBON FOOTPRINT:

- **DISHWASHER:** Run your dishwasher only with a full load. Use the energy-saving setting to dry the dishes. Don't use heat when drying.
- **LAUNDRY:** Wash clothes in warm or cold water instead of hot.
- **LOWER YOUR THERMOSTAT:** Turn down your water heater thermostat—120 degrees is usually sufficient. Monitor the temperature in your home and adjust your thermostat—lower in the winter and higher in the summer.
- **LIGHTING:** Buy energy-efficient compact fluorescent bulbs for your lights.
- **SHOWER HEADS:** Install low-flow shower heads to use less hot water.
- **PLUG AIR LEAKS:** Caulk and weather-strip around doors and windows.
- **DRIVE LESS & DRIVE GREEN:** Whenever possible, walk, bike, carpool, or use mass transit. Check your tire pressure, keep your car tuned up, and purchase a fuel-efficient car.
- **REDUCE & RECYCLE:** Reduce waste by buying minimally packaged goods; choose reusable products over disposable ones. Recycle your potentially recyclable material (paper, plastics, glass).
- **PROTECT PARKS AND GREEN SPACES:** Natural areas help absorb the emissions that create global warming.
- **LEARN MORE ABOUT IT AND GET INVOLVED.**