



GREEN Voice

Global Climate Change and the Pacific West Region

by Jonathan B. Jarvis, Regional Director

“Is the National Park Service ready to put a sprinkler system on the giant sequoias?”

Dr. David Graber, Regional Chief Scientist

In 2006, the Pacific West Region hosted three one-day workshops of park superintendents, scientists, interpreters, and resource managers to discuss Global Climate Change (GCC) and the National Park System. The workshops were held in Washington State, California, and Hawaii. In the first half of each workshop, scientists working in the field of climate research presented the “state of knowledge” of GCC in order to build a basic understanding among the participants of what we have learned from climate data around the world and in particular in the West. Scientists also presented likely outcomes of GCC such as sea level rise, changes to oceanic currents, trade wind variations, animal migrations, and fire regime changes.

The second half of each workshop was an open dialogue on what field managers are already seeing in the parks, what role the National Park Service might play in GCC, and what actions we should take next. For these workshops, any doubts about Global Climate Change and whether humans were contributing to it were set aside if not eliminated. Superintendents cited numerous examples of changes in their respective parks that can be attributed to GCC: receding glaciers, a record year for acres burned in wild fire, low water in reservoirs requiring marinas to close, coral die-offs in the Pacific ocean parks, and increased coastal shoreline erosion.

Building from an adoption of the idea that the climate is changing rapidly from anthropogenic activities, that the effects of GCC will challenge the National Park Service to “preserve parks unimpaired



Top left: Flooding events have increased in parks like Yosemite NP; Lower left: Glaciers like Mt. Dana’s glacier in the Sierra Nevadas are rapidly shrinking; Right: Fires have increased in areas including the Sierra Nevadas



Top left NPS Photo, lower left courtesy Hassan Basagic, right courtesy Jeanne Panek

for the enjoyment of future generations,” and that GCC can at least be slowed by actions now, the workshop participants concluded that the NPS indeed has a role. Participants concluded that the NPS should communicate to the public the science of GCC and its effects to the parks, develop strategies to conserve biodiversity and as the premier resource stewardship agency in the U.S., and walk the talk and become models of sustainability.

The participants noted that the Pacific West Region already was setting a good example in sustainability:

- All two-stroke engines in snowmobiles and watercraft have been replaced with four-stroke engines.
- Constant-run diesel generators are being replaced with photovoltaic systems or connection to “grid” power.
- PWR parks produced over 650,000 kilowatt-hours of renewable energy last year.
- Best Management Practices are being developed for downsizing vehicle

fleets and increasing the percentage of alternative-fuel vehicles.

- LEED gold rating is being sought for the visitor center at Lassen Volcanic NP.
- Conversion to biobased fuels and lubricants is underway.
- A Climate Friendly Parks workshop was held at Yosemite NP and Hawaii Volcanoes NP and is planned for North Cascades NP.
- Several parks – including John Day Fossil Beds NM and Sequoia-Kings Canyon NPs – have interpretive exhibits on climate change or renewable energy.

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Park Headlines



NPS Photo

Tom Belcher of North Cascades National

Park has been named the 2006 winner of the Pacific West Region Director's **Excellence in Natural Resource Stewardship through Maintenance** Award. Tom received this award for his dedication to North Cascades' natural resources through his work in restoring Stehekin Valley, responding to flooding events with ecological impacts in mind, and completing projects with an interdisciplinary approach.

City of Rocks National Reserve implemented a recycling plan last year that introduced aluminum can and plastic recycling in the campgrounds. This **doubled their number of pounds** of cans collected, and every month it increases. The recycling program has been particularly successful because of collaboration between natural resources and facility management.



Photo courtesy Xanterra Parks & Resorts®

Xanterra Parks & Resorts® at Crater Lake

National Park's new Annie Creek Restaurant and Retail building earned the U.S. Green Building Council's **LEED® silver certification**. The building achieved an impressive 34 credits, making them the first concessioner to have two LEED-certified buildings.

USS Arizona Memorial finds time to recognize individuals for their efforts to help the park reduce energy costs. The **EMS team made cards** with a small pin attached, thanking employees for their contribution, whether it's turning off lights when not in use, or any effort to reduce energy. Cards have been given to a variety of employees, including the superintendent, and many of them proudly display their card.



NPS Photo

NPS Concession Environmental Management Program (CoEMP)

won the **2006 White House Closing the Circle Award** for its efforts in developing a program to green concession contracts with goals of protecting the environment, encouraging sustainability, and preventing pollution.

The Pacific West Regional Office in Oakland

created **stickers for their office light switches** to let employees know they have an option when turning on the lights. Their controls let them turn on either two-thirds the lights on sunny days (clear switch) or all of the lights on darker days (both switches). Just letting people know they have an option is the first step towards energy conservation.

The Alaska Regional Office created a new brochure on **global climate change** which was sent to each PWR superintendent recently. The partnership project with NASA's "Earth to Sky" program is a good educational tool for the work parks are planning around global climate change. John Morris, Alaska Regional Office, developed the brochure in conjunction with a traveling exhibit and is working on a web site for park interpreters. If your park wants a larger supply of brochures than what was sent, please email John Morris or email Deanne Adams to get information on pooling funding to produce a large reprint order.



Featured Website

PWR's Climate Change Website - Science of climate change, what is already happening in our parks, power point presentations, interpretive materials, what you can do, and more! Visit [InsideNPS.gov](http://inside.nps.gov), then select Regions, Pacific West Region, Programs, Natural Resources, and Global Climate Change (or <http://inside.nps.gov/regions/region.cfm?lv=3&rgn=223>).

Using EMS to Combat Climate Change

by Sonya Capek, Environmental Management Systems Coordinator

Parks are more and more becoming clean and green. In doing so, parks are trying to make a difference in a somewhat uncontrollable and monumental global event – climate change. Taking on this challenge means that parks must identify activities that contribute to greenhouse gas (GHG) emissions, and then take actions to reduce these emissions. In effect, reducing our carbon footprint.

Doesn't this process sound familiar to what was done under EMS (Environmental Management System)?

EMS is the tool developed to make environmental management more efficient, accountable, comprehensive, and, as a result, reduce our environmental impacts. As a federally mandated tool, it's not going away. Now is the time for parks to dust off those EMSs and determine how your EMS can address your climate change opportunities and challenges.

Remember that EMS is meant to evolve; it can, and should, be adapted for continuous improvement. Bottom line — EMS can help organize your

approach, help determine priorities, and help measure your progress and success in meeting environmental goals and targets relating to climate change. This takes management support, staff communication, dedication, and commitment - just what is needed in combating climate change.

For further information contact: Sonya Capek, Mike Sorenson, or Bretnie Grose, or go to the [PWR EMS website](#) under Facility Management. ■

Environmental Education at Lake Mead National Recreation Area

by Megan Cole, Student Conservation Association Intern

From October to April, if you are on a trail at Lake Mead National Recreation Area, you might encounter a field trip taking place. Every year, thousands of students come to Lake Mead to learn about the Mojave Desert and have fun getting out of the classroom.

Under the watchful eye of park rangers, children learn about the animals, ecology, geology, and history of the area. On any particular day, the park ranger might have to deal with a stubbed toe, a kid “shaking hands” with a cactus, or a kid overexcited about the field trip who loses his lunch, but at the end of the day, hearing from kids that they want to come back and visit the park again with their family is gratifying.

Environmental Education Coordinator Ellen Anderson coordinates the program

and hires three to four interns from the Student Conservation Association to help the program. These positions are part of our overall training plan for the park Environmental Management System. The interns lead the field trips, help coordinate all of the programs, and help design new programs.

The program in place today started in 1990, with the oversight of Kay Rohde, the Chief of Interpretation at Lake Mead. Since then, the Las Vegas metropolitan area has become the fastest growing area in the country and the program has evolved to meet those challenges. With teaching children about the land, the program encourages stewardship of the land and environmental ethics that will instill a life-long love of the environment. ■



NPS Photo



NPS Photo

Joshua Tree Hosts Summit on Practical Alternative Energy

by Karen Messaros, Joshua Tree National Park



SoPAE attendees learn about LED lighting applications in the Exhibit Hall

In October 2006, Joshua Tree National Park, in conjunction with the local community college, Copper Mountain College, and an interagency and business community group, the Basin Wide Foundation, sponsored the area's first conference related to alternative energy sources.

The first "Summit on Practical Alternative Energy" (SoPAE) was a success for almost 200 attendees, including employees from nearby Lake Mead National Recreation Area, Mojave National Preserve, and Death Valley National Park. The event featured presentations and exhibits designed to assist local residents and businesses with currently available options that can decrease the costs of energy.

Topics covered included: photovoltaic systems, wind technology, fuel cell use, tax incentives, and financing and grant information. In addition to showcasing a variety of energy producing equipment, exhibits also included a number of energy efficient products that embody leading edge technologies.

The conference coincided with other events planned by the participating partners. Copper Mountain College completed its much anticipated installation of a solar energy field to provide for its future energy needs and the institution added curriculum in solar installation and maintenance. The Basin

Wide Foundation facilitates events and ideas that can enrich the quality of life for all residents of the Morongo Basin. Combining these organizations' efforts with the environmental commitment of Joshua Tree National Park strengthens the annual event created to provide an educational and enlightening forum to share contemporary solutions to ongoing energy issues.

Joshua Tree Superintendent Curt Sauer commented on the success of the Summit saying, "We were pleased to be a part of this event. Many residents appreciate this information coming to our small and environmentally sensitive community." ■



Superintendent Curt Sauer welcomes SoPAE attendees

NPS Photos



The Greening of San Francisco Maritime

by Christine Baird, San Francisco Maritime National Historical Park



Photovoltaics power the boat shop, shipwright shop, and ranger office.



Utility trucks are powered by electricity and the park mower runs on 100% biodiesel.

NPS Photos

The National Park Service serves as the steward for some of our country's finest natural and cultural resources. As caretakers, the parks are inspired to reduce, reuse and recycle. On a daily basis, San Francisco Maritime National Historical Park is fostering sustainability and getting greener.

The next time you walk out on Hyde Street Pier, look up at the roof of the Small Boat Shop. You will see a small array of solar panels. This photovoltaic system is providing most of the lighting needs for the boat shop, shipwright shop, and ranger office.

The system generates about 500 kilowatt hours monthly, reducing the electric bill by \$1000 a year. Because these kilowatts are generated by solar power, the park is helping to reduce the release of carbon dioxide, a common greenhouse gas, into the atmosphere.

As you step aboard the *Eureka* ferryboat car deck it may look dark, but your movements will trigger a motion sensor, turning on lights as needed immediately brightening your way. About eight years ago, park maintenance employees began installing motion sensors, twist timers on restroom lights, and replacing incandescent bulbs with energy saving and longer lasting compact fluorescents.

By replacing incandescent bulbs with longer lasting, lower watt, compact fluorescents in offices, public spaces, on the pier, and in the ships, the park has

garnered significant savings. The compact fluorescent bulbs in the floodlights that illuminate the Hyde Street Pier have lasted for eight years!

Energy costs are soaring. By becoming more energy efficient, the park has reduced its electrical energy consumption by 60 percent over the last five years. On Hyde Street Pier alone this has meant a savings of \$22,000 per year.

As you sit on a bench in Aquatic Park, admiring the view, the gardener might be mowing the lawn. Take a deep breath and inhale the exhaust fumes – no wait, what's that smell, vegetable oil? Yes, the new park mower runs on B100, a 100 percent vegetable-based diesel fuel.

You might see maintenance employees hauling garbage and tools in small utility vehicles. Until last year, the park used gasoline-powered vehicles; we have now switched to an all electric-powered fleet.

Maintaining historic ships and buildings requires the use of paints, solvents, and cleaning products. A recent painting project used 55 gallons of low VOC (volatile organic compounds) paint. Paints release low levels of toxins into the air. Low VOC paints contains fewer petroleum-based solvents and give off fewer harmful emissions.

Over the last year, employees have worked to reduce the amount of hazardous materials stored in the park.

Through their efforts, the park inventory of paints, varnishes, thinners, parts cleaners, greases and adhesives has been cut in half.

Office recycling bins allow employees to routinely recycle paper, bottles, cans, and batteries. Green bins on Hyde Street Pier make it convenient for visitors to recycle bottles and cans. The park uses a "techno" trash can to recycle "e (electronic) waste" including floppy discs, CDs, DVDs, cell phones, and cables.

An overnight education program for children on *Balclutha* includes the preparation of three meals. All the food waste is composted through the San Francisco City recycling program.

If you visit, we hope you enjoy the park, take away new ideas about maritime history, and continue to practice the three Rs—Reduce, Reuse and Recycle—no matter where you are. ■

North Cascades Environmental Learning Center wins FSC Award

by Katie Miller, Forest Stewardship Council

The Forest Stewardship Council-US (FSC-US) awarded HKP Architects, based in Mount Vernon, Washington, the second annual Designing & Building with FSC Award for their work on the North Cascades Environmental Learning Center in Diablo Lake, Washington. The award recognizes building projects that have furthered responsible forest management through their use of FSC-certified wood products.

Completed in 2005, North Cascades Environmental Learning Center is a partnership between Seattle City Light, the National Park Service and North Cascades Institute. The Center is a campus for field classes, and being located adjacent to mountain areas and two lakes, provides access to the back country of North Cascades National Park.

Project entries were judged by an independent selection panel on the use of wood, inclusion of FSC-certified wood products, overall wood design, and appropriate wood use.

The winning design team felt that the use of FSC-certified wood was a critical part of the Center, as it is located on a pristine wooded site and the owners wanted the Center to be a facility that could demonstrate the greatest stewardship toward natural resources. Of the 38,000 square feet of heavy timber and wood framed building, an incredible 84 percent of the total wood (by cost) used in was FSC-certified. FSC-certified products



Photos courtesy North Cascades Institute

Cedar Lodge incorporates simple lines and low profiles letting the magnificence of the surrounding wilderness be the focus of a visit to the Learning Center.

included custom casework, dimensional lumber, glulam beams and columns, cedar siding and trim, decking, exterior sheathing, doors and flooring.

Roger Dower, president of FSC-US, stated that, “the Designing & Building with FSC Award was created to recognize companies that help to transform building markets and promote conservation through their responsible consumption. We are delighted that such a unique project like the North Cascades Environmental Learning Center chose to ‘walk the talk’ of sustainability and feature FSC-certified products so prominently in the design of their building. They clearly find great value, and comfort, in knowing that their use of wood products helped to conserve the very environment that is the focus of their own educational mission.”

Russ Weiser of HKP architects stated, “We wanted to construct the buildings for the North Cascades Environmental Learning Center with wood because of its natural beauty, and because it is a fitting material for the wooded location in the North Cascades National Park. We were striving for the utmost in sustainability for the Learning Center buildings, so FSC-certified wood was a perfect material. Not only is it low in embodied energy and available locally, but also grown and harvested in an environmentally responsible way.” ■



Fir Lodge provides housing for visitors to the Learning Center.



© About FSC
Forest certification enables consumers to make informed choices when selecting wood and other forest products. The Forest Stewardship Council certifies forests managed to exemplary standards covering environmental, social and economic issues. FSC promotes responsible forest management through a third-party certification program that is used as a market-based tool for ensuring that the world's forests are protected for future generations. The FSC logo identifies products which contain wood from well-managed forests certified in accordance with the rules of the Forest Stewardship Council.

Further information about FSC-US can be found at www.fscus.org.

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Product News

Exit Signs

They are on all the time, night or day, and just one can consume more energy than your refrigerator. But don't let these energy users get you down. Exit sign technology has drastically improved and there are energy-efficient options available.

Incandescent lamps illuminated almost all of the 100 million exit signs in the United States 25 years ago. They usually used two 20-watt lamps with a life expectancy of one to two years.

As a result of the Energy Policy Act of 2005, a lamp that inefficient cannot be sold today, but they are still in use. To reduce energy costs, switch out your incandescent exit signs to an Energy Star® LED (Light Emitting Diode) exit sign.

LED exit signs can use as little as two watts—one-twentieth the electricity used by older incandescent signs. They produce significant illumination and last as much as 10 times longer than incandescents. Prices are usually relatively low and the payback for switching is fast.

ENERGY STAR Program
www.energystar.gov

Lighting Research Center
Rensselaer Polytechnic Institute
www.lrc.rpi.edu ■

Information based on "The Evolution of Exit Signs,"
Environmental Building News, Volume 15, Number 11, November 2006.



How Green is Simple Green®?

It says green right in the name. The color is even green. Does that mean it's really non-toxic? Not necessarily. While Simple Green® makes claims on its bottle that it's non-toxic, biodegradable, and environmentally friendly, it actually contains chemicals that can be harmful.

A key ingredient of Simple Green® is 2-Butoxy Ethanol (or butyl cellosolve), a chemical that can cause reproductive and fetal effects, liver and kidney damage, and blood damage. It also causes eye, nose, throat, and skin irritations.

The company also urges people to dilute the product, but when it is sold in a spray bottle, it encourages consumers to use it at the more toxic full strength. In fact, undiluted, the product does not meet California Air Resources Board's standards for VOC levels. It also fails to meet Green Seal standards for VOC levels and toxicity.

But with no ingredients on the label, and no standard of what "non-toxic" means, consumers have a hard time sorting through all the green claims. Product labels promise cleaners that are natural, nontoxic, environmentally preferred, or

hypoallergenic, but in the United States there is no government or industrywide agreement on what the terms mean. What can you do? Always be sure to read the Material Safety Data Sheet (MSDS) for toxic ingredients (although proprietary information may be withheld), warnings about eye irritants or other health effects, and VOC levels.

More information about green cleaners can be found in the PWR's Green Janitorial Products & Practices Guide, posted on the PWR InsideNPS Green Maintenance website.

More about 2-Butoxy Ethanol and other hazardous chemicals commonly found in janitorial products:

www.westp2net.org/Janitorial/tools.cfm ■





National Park Service
U.S. Department of the Interior
Pacific West Region

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Green Voice shares information about sustainability issues, practices, and resources among the National Park Service units located in the Pacific West Region.

Comments? Questions? Story Ideas?

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As for the future, a range of insightful and exciting actions were identified for the Pacific West that will begin to fulfill these new responsibilities:

- Plan for the future, thinking proactively about the changes that will come and assessing our management options.
- Identify the most at risk resources.
- Make the topic “front and center,” addressing it in all forums such as NAI, the George Wright Conference, and the NPS Centennial.
- Provide training to ensure that all NPS employees understand the issues.
- Incorporate consideration of greenhouse gas emissions into our day-to-day operations.
- Wholeheartedly convert to green energy.
- Design for climate change and its effects.
- Communicate the importance and need for alternative-fuel and hybrid vehicles to GSA and work with GSA to obtain better options.
- Inventory our emissions and ensure that our operations are carbon-neutral.

Climate Change Effects Already Occuring in PWR Parks

Big Hole NB	Had lower flows in the Big Hole River which resulted in state-imposed fishing closures
City of Rocks NRes	Documented the Pinyon pine bark beetle in the area for the first time that far north
Craters of the Moon NM	Recorded the first occurrence of blister rust in limber pine
John Day Fossil Beds NM	Hit a record high temperature of 117° F in 2006
Lake Mead NRA	Experiencing drastic reductions in lake level and an increased need for water from Las Vegas and California
Mojave NPRes	Experienced record precipitation last year and a record fuel load in forests
Mount Rainier NP	Had increased rain-on-snow events, ice caves collapsed, and decrease in glaciers
North Cascades NP	Has seen glaciers shrink, lake levels at lowest recorded inflow, infestation of bark beetle and spruce budworm, and increase in fires
San Juan Island NHP	Experienced shoreline erosion
Sequoia & Kings Canyon NP	Experienced more precipitation and faster snowmelt

- Allocate funding strategically to plan for, and adapt to, the effects of climate change on resources, visitors, infrastructure, and operations.
- Serve as a catalyst for action in the broader community.

Of all the actions we in the Pacific West are doing, and are planning to do, the most important is to be positive. GCC is a challenge for all of our parks, but our extraordinary organization can do something to slow it down and to prepare for the changes that are coming. ■