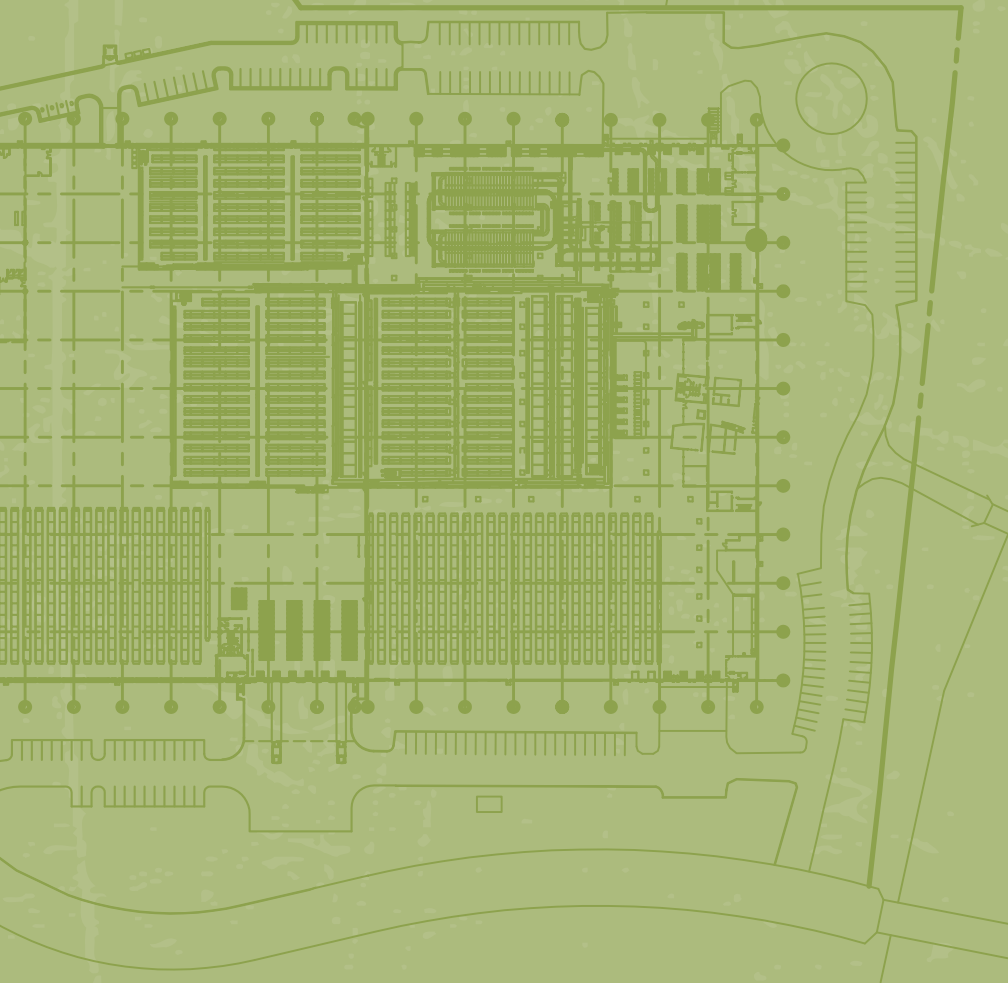


what makes a building GREEN



patagonia

reno service center



*Build the best product,
do no unnecessary harm,
use business to inspire and
implement solutions to the
environmental crisis.*

Patagonia's Mission Statement

A Greener Building

Green building practices strive to balance environmental responsibility, resource efficiency, occupant comfort and community sensitivity. We set high environmental standards for the 171,000 square-foot expansion of this building in pursuit of a silver level Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council (USGBC). USGBC is a coalition of leaders from all segments of the building industry that organized in the late 1990s to develop a “green building” rating system. LEED provides a complete framework for assessing building performance and meeting environmental sustainability goals. Our efforts to meet LEED silver standards for this facility will help mitigate the building’s effect on the environment, which is part and parcel of the Patagonia philosophy. While LEED emphasizes many areas, we chose to focus on the following:

Key Areas of Environmental Design, Engineering and Construction

Managing Storm-Water Runoff

When snow or rainfall hits impermeable surfaces — such as parking lots, roofs and walkways— it runs off, carrying with it oil, gasoline, detergents, pesticides, garbage and other pollutants. These could flow into the nearby Truckee River, which supplies the city of Reno with some 85% of its municipal water. To ensure that the rate and quantity of storm-water runoff from our facility does not exceed pre-development levels, our civil engineers designed a management system that exceeds those found on most commercial sites. In our parking lot, we installed pervious pavers that allow water to percolate back into the ground. We integrated detention ponds into the landscape to capture runoff from the roof before it passes into the soil—a natural filter. In the paved area of the receiving dock, we installed two sand/oil separation units to aggressively filter out contaminants before runoff heads into city storm drains and ultimately the Truckee River.

Intelligent Landscape and Exterior Design

Vegetation cools the environment through shade and evapotranspiration. But land development removes vegetation, often replacing it with dark, non-reflective surfaces such as those found in asphalt parking lots, roofs and walkways. These absorb and radiate heat, causing ambient temperatures to rise. Instead of using asphalt, we installed 100% light-colored concrete and pervious pavers in our parking spaces and driveways. (LEED certification requires 30%.) We also planted trees to provide shade. The roof is covered with a single-ply white membrane that reflects heat and complies with Energy Star requirements.

Water-Efficient Landscaping

Landscape irrigation can consume large quantities of potable water. Native landscapes, on the other hand, can survive largely on available precipitation. Native plants also tend to attract native wildlife, including birds, mammals and insects. A building site planted with natives coexists much better with its natural surroundings. LEED standards require that we use no more than 50% of the potable water a typical commercial property of similar size in this area would use for irrigation. So instead of



Rain and snow that falls on the roof, parking lot and walkways is directed to permeable surfaces and into the soil, which filters out contaminants. PHOTO: TIM DAVIS



Xeric landscaping requires little irrigation, provides habitat and shade (when mature) helping to reduce ambient temperatures. PHOTO: TIM DAVIS

Minimizing Water Use

planting a lot of thirsty plants and turf, we commissioned a landscape architect to design a Xeric landscape plan that uses a variety of native plants, shrubs and trees.

When we waste water, we hasten the depletion of rivers, lakes and aquifers that sustain life. We also expend energy to treat the resulting wastewater. The Energy Policy Act of 1992 established water conservation standards for all toilets, showerheads and faucets to save the United States an estimated 6.5 billion gallons of water per day. But in order to meet LEED standards, we were required to go beyond that: Use 30% less water than the baseline calculated for the building (not including irrigation). To maximize water efficiency, we installed toilets that use 1.6 gallons, waterless urinals and bathroom faucets that shut off automatically and release just ½ gallon of water per minute. So successful was the plumbing engineer's plan, we were able to reduce baseline water use by 40%.

Optimizing Energy Use

Burning non-renewable fossil fuels to produce electricity and generate heat pollutes air, soil and water, speeds global warming and further destabilizes an already unstable world dependent on hydrocarbons. Hydroelectric dams flood precious landscapes and compromise important wildlife habitat. Nuclear power poses all sorts of dire threats, among them radioactive waste, nuclear proliferation and the potential for devastating accidents. As part of the LEED certification, we took a number of steps to reduce our use of energy. On light fixtures, we installed photo sensors and motion detectors that shut them off when not in use. The highest efficiency commercial boilers drive our radiant heat system. We installed R30 insulation in the roof and R12 rigid insulation on warehouse walls to help retain heat in winter and keep the building cool in summer. We use no air conditioning in the warehouse. Instead we employ a night-flush vent system that replaces the hot air of day with cool, nighttime air. These measures result in a more comfortable indoor environment, while reducing both equipment and operating costs. Even small energy savings can result in large environmental and financial gains over the years.



Water consumption in the bathrooms is reduced with the use of waterless urinals, 1.6-gallon flush toilets and low-flow bathroom faucets that shut off automatically. PHOTO: TIM DAVIS



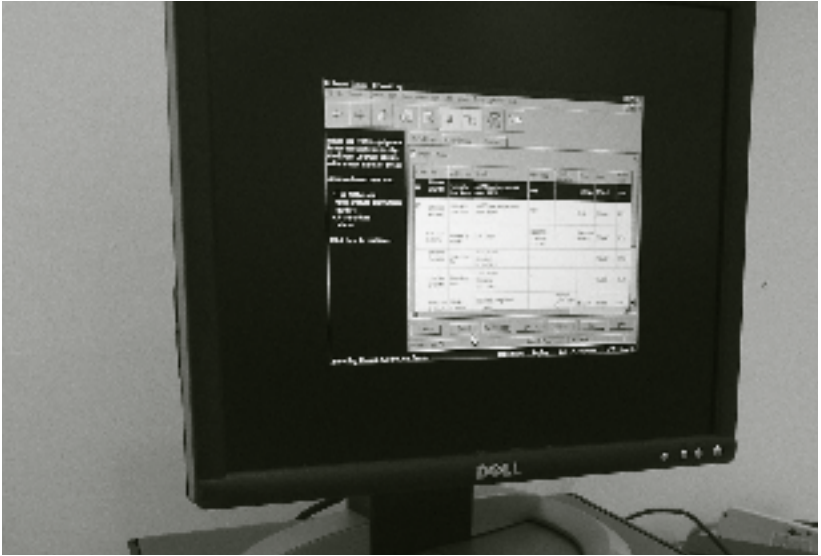
A night-flush exhaust system on the roof replaces the hot air of day with cool nighttime air, thereby eliminating the need for air conditioning. PHOTO: TIM DAVIS

Monitoring Program

The ability to measure and verify just how much energy and water a building consumes can help operators to optimize performance and recognize mechanical malfunctions. During the expected 50-year life of this building, it can also reduce the substantial costs and environmental impacts associated with consuming resources. LEED certification required that we install metering equipment to ensure the Service Center is operating at peak levels. It monitors lighting systems and controls, constant- and variable-motor loads, variable-frequency-drive operations, air- and water-economizers and heat- recovery cycles, air- distribution-static pressures and ventilation-air volumes, boiler efficiencies, building-related-process energy systems and equipment, indoor-water riser and outdoor-irrigation systems. Facilities personnel can easily access a central workstation to review the operation of our systems.

Reducing Construction Waste

Construction and demolition activities generate enormous quantities of solid waste, the majority of which can be recycled. Recycling these materials reduces demand for virgin resources, and, in turn, reduces the environmental impacts associated with resource extraction, processing and transportation. Also, the landfills these materials might otherwise end up in can contaminate groundwater and encroach upon valuable green space. Based on our LEED goals, we were required to develop and implement a waste-management plan leading to the recycling and/or salvaging of at least 75% of total construction, demolition and land-clearing waste. These materials include metal, concrete, cardboard and wood, which we redirected from garbage bins and stored in separate containers for recycling.



Centrally located monitoring equipment ensures that building systems operate at peak efficiency and helps to spot malfunctions. PHOTO: JANE DAY



Construction waste – including metal, concrete, cardboard and wood – was separated for recycling. PHOTO: JANE DAY

Using Building Materials with Recycled Content

By using building materials with recycled content we reduce the environmental impacts associated with extracting, harvesting and manufacturing virgin materials. We also contribute less to the solid wastestream and the associated impacts to land, water and air. At least 10% of the building materials we used in the Service Center were made from post-consumer and post-industrial recycled materials. Concrete for the walls and floor, and steel for the interior columns and roof structure, make up the vast majority of materials with recycled content.

Using Regional Building Materials

The use of building materials manufactured close to the job site supports regional economies, reduces fossil fuel consumption, air pollution and traffic congestion. LEED specifies that at least 20% of the building materials and products we use should be manufactured within a radius of 500 miles. Of those, 50% of the raw materials used in their manufacture have to be extracted, harvested or recovered within 500 miles of the project site. We specified our building materials to meet these LEED requirements.

Building with Certified Wood

Wood can be a truly sustainable resource. It is renewable, biodegradable, non-toxic, energy efficient and recyclable. All too often, however, forests are mismanaged and too many trees are cut. This results in a loss of habitat and biodiversity, and causes erosion, siltation, water and air pollution and solid waste. Wood certified by the Forest Stewardship Council (FSC) comes from forests managed sustainably to ensure their long-term health and integrity. LEED mandates that 50% of wood-based materials used in this building be FSC-certified. We surpassed this requirement. Almost all of our wood products are FSC-certified.



Concrete walls and floors contain recycled content, including steel rebar and flyash. PHOTO: JANE DAY



Interior columns and roof structure contain recycled steel, and almost all of the wood products used in construction are certified by the Forest Stewardship Council. PHOTO: JANE DAY

Using No or Low-VOC Materials

Many building products contain compounds that pollute the air – both indoors and out. The most prominent of these are volatile organic compounds (VOCs), which react with sunlight and nitrogen in the atmosphere to form ground level ozone – a major component of smog. This chemical can compromise human health, crops, forests and ecosystems. It damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. LEED requires that the VOC content of all adhesives and sealants used in this building be less than current content limits mandated by the South Coast Air Quality Management District. VOC emissions from paints and coatings cannot exceed the VOC and chemical component limits of Green Seal's Standard GS-11 requirements. Carpet systems have to meet or exceed the requirements of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program. Composite wood and agrifiber products cannot contain added urea-formaldehyde resins. In all of these areas, we meet LEED standards.

Substituting Natural Light for Electric Lights

Natural light improves the indoor environment. Studies have demonstrated that productivity increases dramatically for occupants working in areas lighted in this fashion. In addition, it can reduce energy consumption devoted to lighting by as much as 50-80%. This conserves natural resources, reduces air pollution and greenhouse gases and saves money. LEED recommends that we achieve a minimum daylight factor of 2% in 75% of all space occupied for critical visual tasks. We met this standard using skylights that track the sun and translucent roof-mounted smoke vents to reflect natural light into the Service Center.

Carbon Dioxide Offsets

Burning fossil fuels to generate electricity produces carbon dioxide, a greenhouse gas responsible for global warming. Ideally, we would buy electricity generated by nonpolluting, renewable sources, but our electricity provider does not offer renewable energy. So to cancel out the carbon dioxide we generate through electricity use in the newly expanded portion of our Service Center, we are buying carbon offsets. The money we pay for these, which is above and beyond what we pay for our electricity, goes to support the growth of renewable energy. We buy our carbon offsets from the Bonneville Environmental Foundation, a 501(c)(3) that gives any profit it makes to support the growth of renewable energy and protect watersheds.



Skylights that track the sun and translucent roof-mounted smoke vents provide natural light, which reduces energy use and increases worker productivity. PHOTO: TIM DAVIS



The Truckee River flows past the Reno Service Center. The portion of the building with the lighter-colored roof is the new addition. PHOTO: TIM DAVIS

Additional Areas of Environmental Improvement

Green Housekeeping

Many cleaning products contain toxic chemicals, caustics and detergents whose manufacture and use can have a harmful effect on the environment. We use Green Seal-certified non-toxic products to clean the Service Center. All paper products have recycled content.

Encouraging Alternative Transportation

Automobile exhaust pollutes the air and contributes to acid rain and global warming. Extracting, refining and transporting oil for fuel production has negative environmental impacts too numerous to list. Reducing the use of private automobiles saves energy and lightens traffic and environmental impacts. Devoting less space to parking lots and roads allows for more green space and decreases storm-water runoff and ambient temperatures. To meet LEED requirements around automobiles, we provide secure bicycle storage with convenient changing/shower/locker facilities for 5% or more of our employees, bought a hybrid car for business use, set aside preferred parking for carpoolers and employees with alternative-fuel vehicles, offer additional incentives to carpoolers and limited the Service Center's parking capacity so as not to exceed minimum local zoning requirements.

Reducing Light Pollution

Poorly designed outdoor lighting illuminates upward, blocking nighttime access to the sky and impacting the nocturnal environment. Thoughtful design and careful maintenance, however, can minimize the negative impacts. To eliminate light trespass from our building and site, we installed high cut-off exterior light fixtures. Signage for our outlet store uses down-lit fixtures that focus light within the design area and prevent upward illumination. No light crosses the property boundary.

Collecting and Storing Recyclables

By recycling everything we can, we reduce the need to extract natural resources, as well as some of the environmental impacts related to landfills and incinerators. To meet LEED standards, we were required to provide an easily accessible recycling area serving the entire building that's dedicated to the separation, collection and storage of paper, corrugated cardboard, glass, plastics and metals.

We took that requirement a few steps further. Efforts include: bins for recycling and compost in the employee kitchen to gather aluminum, plastic, glass, cardboard and vegetable matter. We collect and bale clear plastic shipping bags, which we sell to a maker of recycled plastic lumber. We reuse wood pallets as long as we can and then recycle them. We collect office paper onsite and reuse it for notepads. We recycle ink cartridges and donate outdated computers and electronics to a local company, which refurbishes them and gives them to families and community organizations in need. We collect used Patagonia Capilene® garments for recycling via the company's Common Threads Recycling Program. Employees are also encouraged to bring their outdated electronic devices and household recyclables to the Service Center, as paper and cardboard curbside recycling is not currently available in Reno.

Special thanks to the USGBC's Leadership in Energy and Environmental Design, Reference Guide For New Construction and Major Renovations, from which much of this information was derived.

