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SOMETHING FOR EVERYONE IN MAMMOTH'S ENERGY CONSERVATION MIX

An assortment of articles has recently been published detailing how various resorts have installed new, high profile alternative energy systems. We read them with interest as we experience energy costs soaring to new heights. Large solar panel arrays and hydroelectric power sound wonderful and may work some of the time, but the associated up-front costs leave many operators out of the game as they struggle to make their daily financial goals.

Looking at a broader picture, Mammoth Mountain Ski Area has taken an approach to energy conservation that can fit anyone's budget, small or large, and result in immediate and ongoing savings. Since 2001, the large-scale California resort has measurably reduced its consumption of traditional, non-renewable energy resources without negatively impacting comfort, quality or guest expectations through a variety of measures that most any area can apply. In fact, consolidated energy savings at Mammoth to date have been so great that even with its new Village Gondola on line and powered up, the ski area is still using less energy overall than throughout recent history.

As the first and most accessible step toward energy conservation, Mammoth focused on reducing its energy consumption by increasing efficiencies of existing facilities and systems. To management, it simply didn't make sense to install new technologies on or within inefficient old buildings. In fact, it can be likened to putting a slick new racing sail on an old wooden boat with a leaky hull. It may look great from a distance, but upon closer inspection, it doesn't make sense, it costs a lot, and it likely won't work as intended.

To ensure the success of Mammoth's conservation goals, a staff position within the Facilities Department was designated to organize and oversee "Energy Management" for the company. This task was given to Bob Bradbury, a highly experienced, long-time Mammoth employee with a 20-year history of energy conservation interests and activities. More than anyone, Bradbury understood just how many of Mammoth's facilities and systems were inefficient, wasteful energy users, driving increased environmental impacts and larger-than-necessary utility bills.

Bradbury began his efforts in earnest by conducting thorough energy audits of over 100 buildings – or over 600,000 square feet. Close examination of building construction, occupancy patterns, user habits and existing energy systems illustrated numerous areas ripe for easy fixing at little or no cost. For example, infrared photographs pinpointed heat leaking from many buildings – a costly way to warm the surrounding outdoor environment. Bradbury also examined historical records and wrote a dynamic 125-page conservation plan detailing inefficiencies, solutions and implementation timelines.

Traditional to cutting-edge technologies were included, encompassing a multitude of conservation measures, from the very simple to the very complex.

Following this plan, company-wide conservation efforts mainly target projects with investment returns of one year or less, and/or those that measurably reduce energy use. In this manner, successful small projects provide savings to pay for more capital-intensive projects, as well as allowing for the research and development of untried renewable energy technologies.

Beginning with simple fixes, like installing thousands of compact fluorescent lamps (financed by a grant Bradbury secured from the local utility), to sealing holes in walls and ceilings, and clearing reoccurring ice buildups in exterior doorways, many little actions have added up to huge energy savings. Motion sensors and twist timers have also been installed in many locations for increased room efficiencies and all electrical panels are checked for loose terminals, which can effectively drain power.

More complex fixes now implemented include installing new building controls and upgrades to integrate and track all energy systems, from the very small to the very large. Through real-time connections with Mammoth's intranet, facility managers can see and precisely control energy use, with historical data available for comparisons. Real time energy meters now monitor individual facilities, leading to changes in departmental budgets to include energy costs previously lumped together company-wide with little oversight. Monthly use reports are also provided, leading to further awareness and conservation. Some room and system configurations were also changed to use waste heat generated by existing transformers and servers.

Whether the conservation method is simple or complex, employee education is understood as the underpinning to success by providing increased awareness and knowledge of conservation efforts and

methods. Increased concern and involvement is noticeable as employees are now empowered to act upon identified conservation opportunities, with confidence that the company supports them.

Energy conservation measures are driven by a favorite Bradbury quote: "If you can measure it in small enough units, and put a value to it, you can influence the results." Following this understanding, Mammoth is closely tracking its energy use through a variety of systems designed to measure very small to very large amounts over time, thereby ensure awareness and demonstrating results.

Mammoth's energy conservation accomplishments to date include dramatically improved efficiencies and decreased use within many systems, including snowmaking, snowmelt and company-wide heating/ventilation. Propane use has dropped by 70,000 gallons a year in existing facilities, while electricity needs were decreased 9% compared to the same systems 3 years previous. Even with the new Village Gondola up and running, energy use is still lower than before its completion. Other new energy conservation projects have even paid off three times over in the first year of implementation.

Overall, the realized savings are substantial enough to help fund ongoing development of the company's second energy conservation objective, which is to reduce Mammoth's reliance on fossil fuels through the use of renewable energy resources. Renewables currently used at Mammoth include biodiesel and solar. Wind energy is also being examined, demonstrating a great opportunity for the future. However, severe winds commonly destroy the test instruments along with extreme weather conditions. Geothermal heat is also under study for future facilities and private-public partnership opportunities. Hopefully, associated up-front costs surrounding future systems like these will be paid in part by savings realized from ongoing improvements in energy efficiencies and conservation measures. In all likelihood, however, future savings from conservation will be offset by ongoing increases in fuel costs, illustrating the need for every resort to closely examine its own opportunities for energy conservation measures.

Mammoth Mountain is happy to share its resource conservation experience with other resort operators. For further information on energy conservation measures, please contact Bob Bradbury at 760/934-2571, extension 3320, or email bbradbury@mammoth-mtn.com. For general information on Mammoth's environmental programs, please contact Lisa Isaacs at 760/934-0773 or email lisaacs@mammoth-mtn.com.

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