



2006 EnviroGuard Company Profile

ALTERNATIVE ENERGY PROJECT

BOGUS BASIN FOUNDATION NORDIC GROUP (Nordic Group) is a non-profit 501c(3) charitable organization whose mission is to enhance cross-country skiing for people of all ages and abilities. In 2004, the Nordic Group worked with the Boise State University Engineering Department to design a durable and cost effective alternative solar energy lighting system for two trails - Red Tail and Sapper's Return. With engineering and financial assistance from many organizations and individuals, a prototype was tested and the system was installed on a 5-kilometer section of trail between May and November 2005.

This environmentally friendly and sustainable lighting project is a distributed solar system with 7 subsystems that cover the lighted 5 kilometers of trail. Each subsystem's photovoltaic collector converts solar radiation to low voltage DC electricity that, in turn, charges high-capacity sealed batteries. When needed, a timer controller supplies power to 13 light poles each mounted with 4 or more out-door light fixtures holding very efficient LED (Light Emitting Diodes) bulbs. Overall, 89 light poles serve the loop trail system.

Results of this non-grid connected solar lighting system include:

- System with a collector capacity of 1225 watts and battery capacity of 3080 Amp-hrs.
- Soils restoration in project-related disturbed areas.
- Twenty-two percent of the Project grants have been used to share information about the operation and practicality of this renewable energy system.
- Project will be expanded in 2007 to include another 1.9 kilometers of trail
- Project costs were slightly under \$80,000 with 22% of this (about \$17,500) devoted to education versus approximately \$150,000 (2003 pricing) to install a conventional power line before hanging any lights.
- Solar lighting provides between 9,600 to 17,000 kW-hr per year of clean and renewable energy. Bogus Basin avoids approximately \$800 to \$1400 in annual power

bills.

- Utilizing LED lights require 550 watts of energy each night while a conventionally system would use approximately 30,000 watts of energy nightly.