

**Environmental Improvement Initiative Funding Request: Going Solar on High-
Installation of Solar Panels at the Mountain Research Station**
PHASE II/Final PHASE

The Director of the Mountain Research Station (MRS) and students in the CU Biology Club propose adding 1) a 12 panel solar array (2460 Watts) and 2) a 48 panel solar array (10KW) to offset electricity currently purchased from Excel Energy and complete the final phase of construction working towards making the MRS, the field station for the University of Colorado, carbon neutral. This proposed addition of renewable energy is consistent with the goal of having the MRS become the first carbon neutral campus in the CU system. The proposed project is a continuation of an energy independence initiative started in 2008, with support from a Sustainable CU grant.

The panels in the current project will be installed at two locations. The first (12 panel array) will be put in below the MRS administrative buildings, in an opening with excellent southern exposure. These panels will support the labs, offices, and residential units. The second (48 panel array) will be go in near the C1 research site, and will support research monitoring greenhouse gases.

The MRS, located west of Boulder near Nederland, has supported education and research in environmental sciences for over 80 years. The MRS provides field courses for several CU departments, including EBIO, ENVS, GEOG, and GEOL, as well as the site for field investigations by undergraduates and graduates. The MRS is also used for academic retreats for multiple groups from the CU Boulder campus. Information on the MRS and its programs can be found at <http://www.colorado.edu/mrs/>. The primary contact person for the MRS is the station director Dr. Bill Bowman, also a professor in the Ecology and Evolutionary Biology department and INSTAAR.

The Biology Club is a student-run volunteer organization affiliated with the Department of Ecology and Evolutionary Biology, but open to all students on campus and to the broader community interested in biology and environmental issues. The purpose of the club is to foster interactions among students, faculty, and the broader environmental and biological communities. Activities of the club include: A speaker series by professionals in the biological and environmental sciences, clearing house of opportunities for undergraduate to get involved in research opportunities, internships, honors, and community service, providing a student voice in the department, interactions with faculty and professional outside a classroom setting, promoting awareness of graduate studies in biology and career opportunities, social events and an environmental/nature film series, and increasing environmental awareness on campus. The contact person for the Biology club is Lauren Pacheco.

1) **Project Timeline**

January	2010	Set up CU construction account
Jan-Feb	2010	Award bid to solar contractor

Mar-April 2010	Contractor materials scheduled to arrive
May-June 2010	Start construction
August 2010	Test and sign off on the system
Sept 2010	Xcel Energy install net meter

We have already consulted with experienced solar contractors concerning this project. We will assure the contract will be awarded to a qualified local contractor with at least 5 years experience in the field and having a proven track record. The contractor receiving the bid will also be required to be NABCEP and COSEIA certified.

2) Student Involvement

Undergraduate students from the CU Boulder campus have been associated with designing “green” projects at the MRS for the past 7 years, as part of several environmental design studios, and as part of the Biology Club involvement in infrastructural improvement at the MRS. Students will be involved in evaluating the impact of the solar arrays on energy use and availability. Savings in energy costs to the MRS, estimated using meters at each panel array and the schedule of rebates from Xcel Energy, will be passed on through reduced tuition costs for undergraduate students taking summer field courses.

3) Social Equity

The MRS participates in several projects that bring students from underrepresented groups in the biological sciences in Denver and Boulder elementary and middle schools to the field station to learn more about careers in environmental science (e.g. Alpine Ecology program run through Science Discovery, GK12 program run through CIRES). The MRS also hosts a National Science Foundation program aimed at encouraging students from underrepresented groups in ecology and evolutionary biology to pursue graduate programs. Additionally, several Summer Multicultural Access Training Students have undertaken research at the MRS, as have students from the Biology Club on campus during annual field trip events. The solar arrays would be used as a teaching aid demonstration for K-12 classes and other groups which visit the MRS on a regular basis (BVSD and Denver public schools).

4) Innovation

The remote nature of the field station, and its extreme climate provide at 9500 feet elevation provide a unique situation for use of green technology to provide needed power, while not impacting the delicate environment of the Colorado Front Range.

5) Environmental Impact

The installation of solar panels at the MRS fits into the CU system plan for a Renewable Energy Program and is one step in the process toward the mountain campus becoming carbon neutral. The installation of solar panels will involve minimal environmental impacts during construction, and will provide a model for visitors to the MRS from

other academic institutions, promoting green changes on campuses/research stations nation wide.

6) **Budget/Savings**

The 2 systems 1 (2.5KW) and 1 (10KW) will have a combined cost of~ \$88-100,000, less the Excel Energy rebates the cost adjusts to \$44-50,000 .Therefore, we request \$50,000 for the entire project.

The arrays would produce an estimated 8,375 KWH/year

The arrays would equal a reduction of CO₂ lbs/year (est.) 15,350

The total cost savings for the University of Colorado range from \$3000-4,000 range/year at current energy prices.

7) **Project Longevity**

The solar panel arrays should last and function for at least 25-40 years with low maintenance. If needed, we have access to expertise of CU Facilities Management to help maintain the panels.