Budget Justification: Taylor Ranch Power Expansion Project

The University of Idaho College of Natural Resources administers the Taylor Ranch Biological Field Station Power System Upgrade.

A. Senior Personnel: No funds are requested for PI/co-PI salary.

B. Other Personnel:
   a. “Graduate Student”: One Electrical Engineering Graduate student’s salary, tuition, fees, and fringe for year 1 and one complete academic semester of year 2.

C. Fringe benefits:
   a. Fringe benefits for the Graduate Student are 1% for the academic year and 8% for the summer of 2010.

D. Equipment:
   a. Power generation equipment and energy storage equipment necessary to complete the upgrade at the Taylor Ranch Biological Field Research Station. A private donor has given an additional $6000 to purchase Solar Panels.
   
   i. 1 – 25~30 kW LP Generator $13,000 each $13,000
   ii. 18 - 200 Watt Solar Panels $1,300 each $23,400
   iii. 1 - Xantrex Power Converter System
       1. 3- XW6048 Inverter $4,500 each
       2. 3- XW Power Panel $1,500 each
       3. 2- Photovoltaic Controller $675 each
       4. 1- System Control Panel $300 each
       5. 1- Conduit Box $250 each
       6. 1- Auto Generator Starter $200 each
       7. 2- Inverter Connection kit $850 each
   iv. 32 – 6V, 370 Ahr Lead Acid Battery Set $350 per batt. $11,200
   v. 1- 2kW Hydro-Generation System $15,560 each $15,560
   vi. Equipment Total $84,960
   vii. Matching Funds ($6,000)
   viii. Requested Total $78,960

E. Travel:
   a. Taylor Ranch is located in the Frank Church Wilderness and can only be accessed by a small plane or a two day hike. We are requesting travel funds for students, staff and contractors to get to and from the Taylor Ranch to complete the project. The amount of travel requested is based on 5 trips for students, staff, and contractors to and from the Taylor Ranch Biological Field research Station at $1000 per trip for a total of $5000.

F. Participant Support Costs: Graduate student costs described under other personnel.

G. Other Direct Costs:
a. Materials and Supplies: Power System Upgrade items for the project. (Less than $5k)
   i. 80- 3”x10ft Schedule 40 PVC pipe $9 each $720
   ii. 900 ft of 4 AWG wire $0.40 ft $360
   iii. 1 - Power Data Acquisition Unit $2500 each $2500
   iv. Other supplies for construction of system $1750


c. Computer Services: Upgrade the current wireless internet infrastructure in order to facilitate DAQ and to enable communication between research stations.
   i. 1-16 Port Switch $250 each $250
   ii. 1- Extended Range Router $150 each $150
   iii. 1- 1000ft roll Ethernet Cable $90 each $90
   iv. Other supplies for construction of System $100

d. Other:
   i. Ship bulky and heavy materials from an airstrip or trailhead to the Taylor Ranch Biological Research Station. The cost of shipping is $3,500 per hour of flight. For 3 to 4 trips which should take no more than 3 hours, that totals $10,500.
   ii. University licensed electrical contractors to install and inspect the electrical components. Electrical engineering students are training to do the installation but must work under supervision of licensed personnel. The total for services performed will be $13,500.
   iii. Total other costs: $24,000.