Team Meeting #5
Tuesday, February 24, 2009
12:30 PM

Agenda
- Proposal update
- Personal research updates
- Expansion opportunities (included in design review)
- Weekly review

Proposal Updates
- Look at getting an approximately 30 kW microturbine which can run off both gas/diesel
- Current proposal is being proof-read, formatted for submission
- Waiting on a quote from Canyon for new hydro turbine
- Talked to real-estate office; have a water right of 0.27 cfs
  - Have rights to 0.64 cfs for irrigation, an amount which can be diverted only during summer months
  - Could get rights changed on the books to use for hydro; however, should be a last resort if the project cannot be completed any other way

Personal Research Updates
- Paul Anderson: moved from hydro to looking at incorporating the data acquisition (DAQ) system
  - Need to determine all the data points for monitoring:
    - PV cell voltages
    - Pyranometer: measure solar irradiance; track degradation of PV cells
    - Batteries: voltage, current, and temperature; case temperature may not prove especially useful since it is essentially the ambient temperature; cell temperatures are useful but hard to obtain
    - Hydro: flow, pressure, RM of turbine, phase voltages, phase currents, and voltages/currents on the dump load
    - Inverter: power in, power out, and line loads (for tracking system balance)
    - Lines: power in and power out of each line
- Stephan Frazier: looked at high end solar panels
  - High end panels ~15% efficient; experimental panels up to 43% efficient
  - Thermal solar requires larger installations; large reflecting surface that follow the sun to focus light a a point
- Wyatt Knepper: looked at several types of lead-acid battery
  - Flooded lead-acid possess the best ratio of power density vs. price
  - Same type of batteries currently used at the site; caretakers already comfortable working with this type of battery
- Ian Higginson: Analyzed C transmission options from PV site to battery house
  - 600 VDC system (maximum PV system voltage) would cut line losses considerably
  - Some kind of DC-DC converter required at battery house to reduce line voltage to 48 VDC
battery terminal voltage
➢ Use AWG 4 to allow for possible expansion into additional fields.

Expansion Opportunities
• Possibility of adding an additional hydro generator house
• Expand into additional solar sites
• Additional microturbines/biomass microturbines
• Use Big Creek; currently un-utilized water source on Taylor Ranch site
• Utilize summer irrigation water
• Do an environmental impact study to look at future expansions
  ➢ Use something like flow power (generation technique using natural streamflow)