

Solar Powered Tidal Force M-750 Bike

The bike is charged using a portable “Firefly” photovoltaic (PV) system, pictured at right, which consists of:

- Two 75 watt BP PV modules, for a total of 150 watts of peak solar gain (enough to produce about .75 kWh of usable AC electrical energy per day on average);
- Two Trojan deep cycle batteries (middle-left photo), enough to store several kWh of energy, more than enough for several rainy days;
- A Prostar-30 charge controller;
- A Trace/Xantrax UX 612 SB modified sinewave inverter (middle-right photo) with a (continuous) peak output of 600 watts.



The bike is generally charged at night in the garage, using energy stored in the Firefly’s batteries during the day. The charging station, pictured at right, uses a “Trace Battery Monitor”, which monitors the charge state of the Firefly’s batteries (not the bike’s batteries) and load currents, and a “KILL A WATT” electrical meter, which gives a precise measurement of the amount of energy utilized by the bike when charging. Together, these measurements allow a full characterization of the system performance, from “Sun to Wheel”.



Preliminary results suggest that the bike takes about .30 kWh to charge from an initial battery reading level of 3, .40 kWh from a level of 2, and .50 kWh from a level of 1.

The bike is being ridden on town roads by a rider with a weight of approximately 195 lbs (not counting backpack, other accessories), in Los Alamos, New Mexico, which is high altitude location (7000+ ft above sea level). The terrain is hilly, with hills in the 10-100 ft height range.

For more information, contact Ben Luce; 505-660-4041, Lucien@cybermesa.com.