

Homer Hut Solar Power System Upgrade 2015

When Homer Hut was refurbished in 2006 a small solar panel was fitted to provide power for the mountain radio in the Warden's Quarters. A few years after this, the Southland Section of the NZAC undertook an expansion to supply electric lighting to the hut. However, at that time the hut was rarely used mid-autumn through to mid-spring, so a relatively small solar array was installed. Over the past few years, with the resurgence of winter mountaineering in the Darrans and with increased usage of the hut right through the year, that system has proved inadequate.



old solar panels

While storage capacity (battery bank) is more than adequate, the problem was that limited daylight hours and exposure to sunlight has meant that harvesting enough energy to recharge the batteries was impossible while the hut was being used. As a consequence, in order not to damage the batteries by excessive discharging, we have either had to limit the delivery of power, or, to turn it off entirely, from mid-autumn through to mid-spring.

Homer is a base lodge, and is accessible by vehicle, so hut users nowadays expect to have a higher level of amenity supplied. By increasing the size of the solar array, we could make more use of the available daylight and direct sunlight in the off seasons, and therefore minimizing the gradual run down of the state of charge in the batteries.

Bearing in mind the practical limitations around installing solar panels on a roof in an area where over a metre of snow in a single fall is not uncommon, we decided on the following course of action.

- Increasing the original 220 Watt solar panel array to 500 Watt.
- Install new mounting brackets to accommodate the increased physical size of the array, and also allow us to change the mounting angle slightly to make better use of the winter sun.
- Upgrade the solar controller to handle the increased charging current.



The effect of these changes is that while the batteries still discharge to the same degree when supplying power at night, we can now replace the current used to a far greater degree through the following day. On a recent 5 day visit to Homer in less than optimal weather, when we previously would have expected the state of charge of the batteries to be diminishing daily, we found that they were indeed largely being replenished, even on a dull day. When the sun came out for a day, the batteries were fully recharged.

Image of old panels with the new ones about to be installed

Increasing the angle at which the panels have been mounted has had an additional benefit, in that snow now tends to slough off the panels more readily. Panels with no obstruction are required for power generation. The mounting array fitted is also adjustable, so, should it be required, we can reduce the mounting angle to better suit the summer sun with ease.

While it is largely a convenience/amenity aspect, it looks very much as if we will now be in a position to be able to supply reliable lighting on a year round basis.

The final step in this project is the replacement of conventional energy saver light bulbs with higher efficiency LED lights, drawing less current from the batteries at night, and so further improving overall performance. After we have monitored usage for a typical, we may even be in a position to install USB power outlets in the main hut, to allow recharging of cameras and phones.

Alastair Walker
25th June 2015



new solar panels installed