

## OFF GRID POWER FOR PORTABLE OPERATION

There are a few considerations to make when operating portable and off grid. We are going to explore some of these things and hopefully help you to understand some of the thoughts that go into the decision of choosing a way to power your portable station.

### 1. EQUIPMENT

The choice of equipment is of primary importance for how you will select your source of power for portable operations. Many radios have a somewhat large current draw when the radio is in receive mode. You want your choice of equipment to use as little power as possible when in receive. This is where your operation will be most of the time that you are on the air. The more power that can be saved in the receive mode, the longer you will be able to operate. How much power you will need to transmit will be the next consideration. If you can get by with 5 watts of power to do the job, as opposed to 100 or 1000 watts of power, the longer you will be able to operate with a given power supply. You will find that you listen 80% or more of the time and transmit 20% or less of the time. This does change considerably if you are rag chewing with someone.

### 2. LENGTH OF OPERATION

The length of time that you plan to operate is also of importance. If you will only be operating for a short time, with low power then you can get by with less. Using a small light Lithium Ion Phosphate battery might be enough to carry you through.

If you are planning to operate at 100 watts or more, you will need to give thought about how you will replenish the power that you use from your source, and how long it will take to replenish

### 3. BATTERY

There are many choices in battery types. They all have their Pros and Cons. We will not get into that discussion here, let's just say that we are using battery power. The capacity of the battery will be of primary importance to us. The larger that it is, the longer that we can operate. We also know that the less draw on the battery, the longer we will be able to operate. Larger capacity generally means that the battery will be heavier. If I am going to do a SOTA activation on the top of a mountain and have to carry this battery up there, I am going to want a radio and battery that will weigh as little as possible. My activation time will be short and my power will be low.

#### 4. SOLAR

Solar panels are becoming cheaper and more efficient all of the time. They also come in fold-able configurations that make them easier to carry, and their output power has improved. They are a good light weight way to extend your operating time. The club has 4 sets of panels that can be used to extend operating time and also charge the system if need be. They make great battery extenders by helping to add to the power that is being consumed by our equipment. They can take what might be a couple of hours of run time and turn it into a day run time. The drawback of solar is that it only works at peak efficiency when you have them in good sunshine. They do put in power even on cloudy days, although not as much or as fast. You also have to keep them clean. Dirt and dust is the number 1 cause of solar panel inefficiency. The other drawback is the solar charge controller. These can introduce noise into the system that can desensitize your received signals by increasing the noise floor on your receiver. Do your research on charge controllers before you buy. There is a guy on You Tube, OH8STN that has done a lot of research in this area. He is worth looking at if this is something that you are interested in.

#### 5. GENERATOR

Generators are the best way to power up, High Power Equipment. If you are going to run a station that outputs a 1000 watts or more, then a generator is the way to go. The inverter type that Kachina Club owns is a very good choice, in that it is quiet and very easy on fuel. They are relatively expensive to purchase and heavy to carry around. Generators also require that you have a supply of fuel on hand. They can run for long periods of time and will supply the most power with relative ease. Some generators are very noisy and will have to be removed from the operating position quite a ways. Since most ham radio equipment will run directly on 12 volts DC, you will also have to have a way to convert the power from the 120 / 240 volt output of most generators.

This is by no means all that there is to choosing how to power your portable station, it is just a starting point to help you decide what you would like to use to fit your need and how to better prepare for the situation you find yourself in. I invite you to research further on You Tube and the internet to discover the best way to accomplish your particular needs.