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We are often asked.....

to provide pricing on a base station. The proper answer does not come easily. The reason is there are many factors to consider, starting with whether or not the user has a license to operate a base station.

In public safety applications, many users assume if the main county licensee agrees to allow installation of a base station by a particular department that everything is OK. Generally speaking, this is NOT OK! While it is true that the primary licensee may be authorized to allow others to use pagers, handheld, or mobile radios, it is unlikely that that licensee has the authority to authorize fixed station operation. So, if you require a fixed station, what are your alternatives?

If you desired to operate your base station on the same frequency as others in your area, it will be necessary to obtain an FCC license. This requires payment of a preparation and coordination fee. The fee is based on whether you apply for a single frequency (simplex) or repeater (duplex) authorization. For individual departments, it is most common to apply for a simplex single frequency license to allow compatibility with other users in your area. The cost will vary depending on whether you are a Fire, EMS, or Police user. As a general rule, assume a cost of \$500 for a single frequency station or \$750 for a repeater. Assume a delay of several months or more for processing by the Coordinator and the FCC. In most cases, a third party is recommended to prepare and submit your application to the Coordinator who in turn submits the coordinated application to the FCC. One of the better ones is Josie Lynch in Rockville, MD. You can contact Josie at 301.309.2380. Additional information on coordination and licensing is available at http://www.paccrst.com/downloads/technical_bulletins/6_11_04_Bull.pdf.

There are two options worthy of consideration. If you operate in the VHF (150-174 MHz band), you can operate WITHOUT A LICENSE under the rules of the Multi User Radio Service (MURS). Additional information is available on the web at www.info4u.us/FCCPrimer.pdf in the MURS section. There are some limitations relative to antenna height, power output, etc. but MURS would be an excellent choice for rural users. In effect, you could operate on your private MURS frequency while monitoring the main dispatch channel. Not a bad alternative! UHF users can apply for a General Mobile Radio Service (GMRS) license if the application is for personal use. There is a nominal application preparation and FCC licensing fee (no coordination required).

Additional information is available at the aforementioned web site in the GMRS section. Preparation and submission cost should not exceed \$150. There are no "Free" licensing bands for low band users (30-50 MHz) nor can you apply for duplex repeater operation.

Applicants desiring operation in this band should contact Josie Lynch or other coordinator of your choice. You also have the option of preparing your own application to reduce the cost. Details are available at www.fcc.gov.

After addressing the type of operation required (simplex or repeater) and the licensing procedure desired, you are ready to select the equipment best suited for your individual requirements. Before proceeding, we should point out the function and components of a *base station*.

The *function* of a base station is to essentially provide communications from a fixed location using AC power rather than DC power. In essence, a typical base station is nothing more than a merging of components based on a standard 12 volt DC mobile. The first component to be added is an AC power supply. If power greater than 50 watts is deemed necessary, an amplifier (typically on the order of 100 watts) is added. Sometimes, optional accessories such as desk microphones, paging encoders, phone patches, and lightning protection are added. The fact is that the heart of the system is based on a standard mobile radio.

There is another option that is used as a base station component. A *duplexer* is a device that allows a radio to transmit and receive at the same time (as opposed to the conventional push-to-talk, release-to-listen mode associate with simplex radio communications). This simultaneous talk and listen capability is known as the *duplex* mode. The advantage of a duplex station is that it can *repeat* calls between mobile or handheld radios that would not be able to communicate directly. This is a significant benefit for handheld radio users operating over extended areas or by public safety users requiring long range communications between widely separated mobile or handheld radios. If you would like more information on repeater stations, please go to www.falcondirect.com/repeaters.

The key to the successful operation of any base station is based on three factors. First, the station should be at the geographical center of the area of operations. Second, the antenna should be located as high as possible. Third, an efficient antenna and low loss transmission cable with the shortest possible length will assure maximum performance. A low powered station with a proper antenna system can outperform a high powered model. This is particularly true for repeater stations due to the effect of a high powered transmitter operating in close proximity to the associated receiver.

If you are contemplating upgrading an existing simplex system to repeater operation, there are several factors to be considered. First, you need to address the requirement for FCC licensing. We can assist you in this area. Just send us an email at sales@falcondirect.com or call us at (205) 854-2611. A repeater requires two frequencies - one for transmitting and the other for receiving. These two frequencies may be new frequencies or a second frequency added to an existing frequency. Your existing handheld and mobile radios must be reprogrammed with the repeater frequency *pair* in order to function with the repeater.

In our MOBILE information package (www.falcondirect.com/mobiles), we note that any mobile radio can be used as a base station by adding an optional AC power supply. A *real* base station is designed to operate on AC power with no external devices required. Ideally, the station should be able to operate either in the simplex (single frequency) or duplex (paired frequencies). For your consideration, we have provided information on several of our most popular base stations. This information is available at www.falcondirect.com/BaseStations/Comparisons. Thanks for your interest in base stations by Falcon Direct. We look forward to serving you!

The Falcon Team
At your service!

Base Station Planner.doc