A Simple and Affordable Narrow Band Migration Plan Prepared Just For YOU!

From:

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Narrow Band Planning Demystified

The Requirement for Narrow Banding – Short Version

It sometime appears that members of the animal kingdom are smarter than us humans. Take the geese for example. As winter approaches, the head goose knows they will get their little goose behinds frozen solid if they don't fly south, so he (and I have always assumed the goose leader to be a him, but I could be wrong) announces to the rest that it is time go south. There is no discussion, no vote, and no dissenters. They just take off, get into formation, and get the job done.

We humans are a little more advanced. We have traditions, opinions, learning experiences, feelings, egos, agendas, power struggles, and a thousand other things that keep us from doing what we have to do when we have to do it. Our lead goose is often government regulatory agencies such as the Federal Communications Commission (FCC) who gets their authority from Congress. When the FCC speaks, we do as told or suffer the consequences. The FCC has spoken. Here is what they have said.

If you operate a 2-way radio system in the VHF or UHF frequency bands in the USA, you will, with a few limited exceptions, convert from 25 kHz bandwidth to 12.5 kHz before the close of day on January 31, 2012 or you will get off the air, or you will pay huge fines, lose the use of your radio system, and possibly go to jail. The discussion is closed. You WILL do as told or else. For those requiring a more detailed explanation, please visit http://falconinfo.blogspot.com/2009/12/latest-narrowband-licensing-update-by.html. For now, let's just say that it is necessary for you to convert to narrow band by 12/31/2012.

Why the FCC say Narrow Banding is required

Radio spectrum is like a ruler. There are so many inches. If we have 12 inches and only need 12 increments (or spaces), we are OK with a standard 12" ruler. However, if we need 24 spaces, we have to divide our spaces into half inch increments and if we need 48 spaces, we use quarter inch increments. The bottom line is that we get 48 spaces where we originally had only 12 but the ruler hasn't grown. It has been allocated to utilize smaller spaces. That is exactly what we do when we need more radio frequencies within the same spectrum.

An existing 25 kHz frequency can be considered to be one inch wide on our foot long ruler. If we cut each inch in half, we get two 12.5 kHz frequencies in the same space or four 6.25 kHz frequencies if we divide our one inch segments into quarter inch allocations. We have an increasing demand for frequencies within a fixed spectrum. Therefore, the logical solution is to reduce bandwidth. Simple isn't it?

VHF and UHF users are under a mandate to make this first reduction by the end of 2012. We could go on, but you should have the general idea by now. If not, go back and review the link to the information resource listed above.

So how do I begin to plan for narrow band conversion?

The very first thing you do is to address the most immediate issue – your FCC license (if you have one). The longer you wait, the harder it will be to do. You can expect the process to become more complicated with more delays, and possibly even more expense. So why wait? Do it now and get it over!

You will need to modify your existing FCC license if you are not already authorized for narrow band (NB) 12.5 kHz before December 31, 2012. We can handle this for you for a fee of $400 per repeater station, associated control stations and mobiles, INCLUDING authorization for operation on any or all digital operating systems – DMR, NXDN, or P25 at 12.5 kHz or 6.25 kHz as desired. To get started, call us at 205.854.2611 TODAY!

If DMR, NXDN, and P25 terms are new to you, bear with us. We will be providing more explanation shortly. For now, let us just say that the cost of licensing is the same whether you simply apply for narrow banding, or if you include authorization for digital operation. It costs no more to be authorized for ALL analog and digital operating systems than it does for a single operating mode.

Next, you take stock of your existing radios, compile a list and send them to a trusted communications supplier (like us) to determine which radios can be programmed to meet the new narrow band requirements and which will have to be replaced. This list will be used to determine your budgetary requirements over the next few years. In most cases, your repeater/base stations will not make the conversion, but this can be addressed after a review of your equipment list. As a general rule, we recommend that your first equipment purchase (if required) would be a narrow band repeater station capable of meeting your requirements. A listing of our top choice repeater stations is available at www.info4u.us/NewRepeaters.pdf.

So what happens when you switch to narrow band?

Analog wireless communications technology is based on bandwidth. Technically, the more bandwidth you have, the more audio you have and more audio equates to more range. The current standard is 25 kHz (It wasn't that long ago that it was 100 kHz!). If we reduce that to 12.5 kHz, there will be a predictable loss of audio/range. You can also expect possible interference from digital systems occupying same channel spacing.

Some radios have a feature called compandering which compresses the voice transmission as it is sent over the air, then expands it for full fidelity when detected by the receiving radio. This technology reduces the effects of noise on the received signal which in turn maximizes narrow band analog operation. We suggest that you do not purchase replacement or additional radios that do not incorporate this capability.

The bottom line is that you can expect some performance degradation when you switch to narrow band analog operation. This is not true with digital systems. However, there are some issues with digital systems, beginning with the selection of the system best suited for your use. We will discuss this in more detail on the following page with the most popular choices being DMR, NXDN, and P25.

Narrow Band Operating System Choices

In our opinion, any equipment selected for narrow band operation should have both analog and digital capability since there are some reported problems associated with the use of digital radios when used in high noise environments (SCBA's for example).

While the FCC does not require the use of digital technology for 2-way radio communications, the fact remains that digital has some significant operating advantages over analog. For this reason, the trend is toward digital as it has already been established in cellular and TV broadcast communications (with AM and FM broadcast radio close behind). The U.S. Government has already switched to digital 2-way with the established standard based on APCO-25 (P25) technology. See www.info4u.us/Top-5-Reasons.pdf for more information on why many users are switching to digital without waiting for regulatory mandates.

All agencies of the U.S. Government are required to purchase only P25 equipment. This standard is also applicable to the purchase of 2-way radio equipment funded by 2009 Assistance to Firefighters grants as approved by the Department of Homeland Security (DHS) state operating plans. Having said that we should point out that it is not our role to provide legal interpretations or to act as a watchdog for compliance issues. For those that are interested in such things, we invite you to visit several of our resource sites as follows: For more information about APCO-25 (P25), go to www.info4u.us/APCO25. For information relating to AFG communications funding, please visit our Blog site at: http://falconinfo.blogspot.com/2010/02/important-message-concerning-fire.html

In addition to analog and P25, there are several other digital operating standards available in the USA. They are as follows:

DMR (Digital Mobile Radio). Originally a European standard, DMR is most commonly known in the USA as MotoTRBO by Motorola. A new offering, known as Hytera is also available. See www.info4u.us/DMR.pdf for additional information

NXDN (known as dPMR in Europe) is a technology jointly developed by ICOM and Kenwood. This is the only technology available today in the USA designed for single channel 6.25 kHz operation. More information is available on the ICOM offering at www.icomfuture.com.

Another Government Agency – This one with the money!

The Department of Homeland Security (DHS) is charged with the responsibility of making our first responders more efficient. A key issue in this requirement is the establishment of a uniform operating stand which is called interoperability. THAT STANDARD IS P25. There are those who try to promote their own standards for self serving interests. Two notable examples, and winners of the Falcon Direct Doofus Award are noted at http://falconinfo.blogspot.com/2010/03/doofus-of-day-awards.html. The fact is that DHS controls grant money and if you intend to spend federal grant money, your purchase WILL be P25, period!

It is not our job to tell you what, or what not to buy with federal grant money. It IS our responsibility not to confuse you with personal opinions, speculations, hidden objectives, or spinning information to modify facts for self serving purposes. If you have been awarded a 2009 Assistance to Firefighter (AFG) grant, you need to know the following:

1) When you and/or your grant writer attended the 2009 AFG workshops sponsored by FEMA, you were both told, and provided with written reference material that ANY GRANT FOR COMMUNICATIONS MUST BE P25 COMPLIANT!

2) When you completed your request for funding and signed the application, you were certifying that you had full knowledge of all requirements and attested to compliance with those requirements.

3) Your application was processed, reviewed, and approved on the basis of the information that you submitted.

4) No individual, grant writer, dealer, manufacturer, or other self proclaimed expert has the authority to purchase or recommend anything other than what you applied for without specific written approval of a designated DHS representative.

5) There are three levels of DHS authority – Federal, Regional, and State with contact information for each listed below. Before purchasing any communications equipment with 2009 AFG grant money, please, for your own protection; call any or all of the contacts listed below and request a written answer to this question. *I applied for a grant to purchase communications equipment under the guidelines of the 2009 AFG grant program for interoperable P25 radios. I would now prefer to purchase an alternative technology such as MotoTRBO or NXDN. Can I switch from P25 to something else?* You won't have to wait very long for an answer!

Federal

U.S. Department of Homeland Security/FEMA
800 K Street NW
Washington, DC 20472-3620
Phone 866.274.0960 – Email firegrants@dhs.gov

Region 4 which includes Alabama

Federal Regional Center
402 South Pinetree Blvd.
Thomasville, GA 31792
Phone or Email your area representative
Alma Christian - Ph: (229) 225-4588 or Email: alma.christian@dhs.gov
Vicki Murphy - Ph: (229) 225-4518 or Email: vicki.murphy@dhs.gov
Vincent Ramm - Ph: (229) 225-4965 or Email: vincent.ramm@associates.dhs.gov

Alabama DHS

Chuck Murph Ph: 334-353-3050– Email chuck.murph@dhs.alabama.gov

Just in case you are curious, there are some potential negative consequences in store for those who violate the conditions of their grant award, the least of which is that you could lose your funding or be charged back for funds already received. The following is a statement directly from the FEMA web site.

Each recipient awarded funds made available under any grants by FEMA is required to promptly inform FEMA's Office of Inspector General regarding any credible evidence that a principal, employee, agent, contractor, sub-recipient, subcontractor, or other person has submitted a false claim under the False Claims Act or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity, or similar misconduct involving those grant funds. The DHS Office of Inspector General can be reached at http://www.dhs.gov/xoig/.

Practical Interoperability

We are actually dealing with three issues at the same time – narrow banding (an unfunded mandate for all FCC licensees), interoperability (applicable essentially to the public safety community and disaster support services such as governmental administration, transportation, and utilities), and for those receiving FEDERAL grant money, the requirement to comply with federal and state interoperability plans.

Sometimes these plans are practical, sometimes not. Florida, Illinois, Mississippi, New York, South Carolina, and Wisconsin, among others have developed statewide plans based on a common network using 700 MHz (Mississippi), 800 MHz (Florida), and even VHF (Wisconsin). California still uses 30-50 MHz (Low Band, which was written off by most users back in the 60's). Alabama is in the process of bidding out a 700 MHz system as this material is being prepared (March 2010).

Some states, such as Florida have found that it is difficult to provide six thousand dollar mobile and portable radios (plus a monthly network fee) and extended infrastructure to accommodate the needs of smaller, rural departments. Okaloosa County (Crestview) is a good example of the need for a practical application of technology and common sense.

The Florida Department of Forestry provides annual grants to fire departments that does NOT require purchase of equipment capable of operating on the State 800 MHz system. They DO fund local interoperability for VHF users (Okaloosa County is predominantly VHF). The Almarante Fire Department recently received a grant for the purchase of analog VHF radios along with an interoperable bridge that allows them to provide or receive mutual aid with Covington County Alabama departments operating on UHF. They also received funding for a VHF/800 MHz bridge to allow them to communicate with users on the Florida 800 MHz network. Now, that is common sense!

Obviously, we have the equipment to provide these interoperable solutions. We even have the ability to link computers, even Blackberry's and iPhones to radios, and we think it is good for you to know there are suppliers with such capabilities. There are analog radios that can be upgraded to digital, whether your choice is DMR, NXDN, or P25 but these alternatives do NOT meet the criteria of funding for P25 interoperable equipment. Don't let anyone play mind games with you. Get the facts BEFORE you buy!

Summing it all up

Let's summarize. You must have all your VHF or UHF 2-way radios operating on narrow band 12.5 kHz by the end of 2012. Many of your radios may have the potential to be reprogrammed from 25 to 12.5 kHz. Some may not, including most repeater/base stations. The following is a suggested migration plan following the guidelines discussed in this material.

1) Apply for a license change from 25 kHz to 12.5 kHz to allow both analog and digital operation including DMR, NXDN, and P25. Don't wait to the last minute. Do it NOW! If we do it for you, the cost will be $400 for a single site repeater, associated control stations (fixed stations with antennas that don't exceed 20 feet above the height of the associated building) as well as mobiles, portables, and pagers.

2) Make up a list of all your existing equipment designating type (mobile, portable, etc.), brand, and model number. If you can't determine the model number, the alternative would be to go by age of the equipment. If necessary, you can request an on-site inspection by a prospective vendor, which hopefully would be us. There is a charge for this service.

3) Review the available product offerings for analog, DMR, NXDN, and P25 equipment to determine whether your plans will involve continued analog operation or whether you would like to plan for phasing in digital equipment at some point. We offer a wide variety of analog equipment by BK, HeadLine, HYT, ICOM, Maxon, Midland, Motorola, Relm, and TEKK as well as Apollo, Motorola, and US Alert pagers. We offer Hytera and Motorola (MotoTRBO) DMR equipment as well as BK, ICOM, Midland and Motorola P25 radios. For a listing of our top choice analog, DMR, NXDN, and P25 radios, please visit the following web sites:

For Repeater/Base Stations:	Visit www.info4u.us/NewRepeaters.pdf
For Mobile Radios:	Visit www.info4u.us/NewMobiles.pdf
For Portable Radios:	Visit www.info4u.us/NewPortables.pdf
For Pagers:	Visit www.info4u.us/NewPagers.pdf

4) If you have been awarded a grant for communications equipment under the 2009 FEMA AFG program, do not allow anyone to confuse you with non-facts. Read the application you submitted. Read the guidance that was prepared for you by FEMA to be sure that you clearly understood that all communications equipment must be P25 compatible in accord with the SAFECOM 2009 Guidance. Additional information is available at www.info4u.us/2009-Awards.pdf.

If you will not be using federal funds for the procurement of new narrow band equipment, review the offerings available from DMR, NXDN, and P25 suppliers, or just call us at 205.854.2611 or email narrowbanding4u@falcondirect.com. In closing, if you would like a personal meeting, individually, or with a group; just let us know – your place or ours as you choose.

Burch H. Falkner – *At your service!*