Narrowbanding 101

Robert Symons, Wyoming Statewide Interoperability Coordinator
Alan Komenski, Washington Statewide Interoperability Coordinator

The purpose of this article is to spread awareness of the Federal Communications Commission (FCC) mandate regarding radio communication system narrowband compliance, and to provide an overview of the mandate and its impact on public safety agencies.

The next two years will be a busy time for public safety agencies across the Nation. With the Federal Communications Commission's (FCC) January 1, 2013 narrowbanding mandate deadline approaching, agencies will be devoting significant resources to planning for and executing a coordinated transition. To help agencies with the transition, this article provides an overview of the narrowbanding mandate and its impact on public safety agencies. This is the first in a series of narrowbanding articles that will be distributed in the coming months; each of these stakeholder-written articles will provide insight and suggested resources to help with the transition.

What is Narrowbanding?

Simply put, narrowbanding requires VHF and UHF radios to use less radio bandwidth (i.e., spectrum), thus leaving the vacated spectrum available to form new channels. Narrowbanding ensures more efficient use of the spectrum and greater spectrum access for public safety and non-public safety users. Narrowbanding may relieve channel congestion and result in increased channel availability. Narrowband spectrum has been coordinated to users since 1997. Currently, there is often not enough spectrum available for licensees to expand their existing systems or implement new systems.

Overview of FCC Narrowband Mandate and Deadlines

The FCC mandated that all non-Federal public safety licensees operating 25 kHz (wideband) radio systems in the VHF and UHF bands must migrate to 12.5 kHz (narrowband) channels **on or before January 1, 2013.** Many local public safety radio systems have not migrated to 12.5 kHz channels yet. With less than two years to coordinate narrowbanding efforts, concerns are growing that many public safety agencies will not meet the deadline.

This upcoming deadline affects all FCC-licensed State and local public safety radio systems. Wideband radio operation will violate FCC regulations beginning in 2013, and agencies not meeting that deadline face the loss of communication capabilities or fines.

Because the original narrowbanding rules were adopted in 1995, the FCC believes organizations have had sufficient time to prepare for this migration. Planning for the narrowband migration in advance of the deadline is essential to avoid shop scheduling issues (as they will be overwhelmed with requests closer to the deadline) and limited availability of replacement equipment. Failure to address the narrowband migration requirements may result in

communications interference, and loss of interoperability. **Agencies should also note that it is highly unlikely that the FCC will extend the January 1, 2013 deadline.**

Who is Affected?

This mandate affects all radio systems—including voice, data (Supervisory Control and Data Acquisition [SCADA]) and telemetry—operating at VHF (150-174 MHz) and UHF (421-512 MHz) utilizing FCC Part 90 frequencies made up of the public safety and industrial/business licensees. This includes, but is not limited to State and local governments, public safety agencies, public works, utilities, hospitals, private industry, higher education institutions, and K-12 schools. Certain FCC frequencies designated for paging use are excluded from the narrowbanding mandate as well as radio equipment that meets the FCC 4.8 KBPS data rate per 6.25 KHz channel spacing or 9.6 KBPS data rate at 12.5 KHz channel spacing or 19.2 KBPS data rate for 25 KHz channel spacing.

How to Prepare for Narrowbanding

1) Verify that your company or organization has a current and valid FCC Part 90 radio station license. Click here to do a FCC License search:http://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp

2) Conduct a full inventory of all radios in your system, including all portable (hand-carried) radios, mobile (in-vehicle) radios, dispatcher-used radios, wireless data or SCADA radios, and on- or off-site base or repeater radios.

3) Contact a local professional two-way radio service vendor for assistance in determining which models are capable of being re-programmed for narrowband operation and which models are not. Most new equipment has the capability for both 25 kHz and 12.5 kHz operation, because any VHF/UHF radio equipment accepted by the FCC after February 14, 1997, had to have 12.5 kHz capability.

4) Initiate the internal business process of budgeting for and procuring any new narrowband capable replacement radios that may be needed as well as contracted labor to program radios. Many public safety agencies only have one budget cycle left to secure funding.

5) Develop a "wideband" to" narrowband" system conversion plan that reflects well-coordinated logistical and implementation strategies. The plan should address:

- **a)** The replacement and installation of any new narrowband-capable off-site base or repeater station radio(s) needed in advance

b) The reprogramming of all radios in a system; this should occur simultaneously, if possible, to assure minimal disruption to normal radio communication operations

c) Potential loss of radio system coverage

d) Include local, regional, and statewide mutual aid channels

6) Coordinate narrowbanding implementation schedules with neighboring public safety agencies and other non-governmental agencies that might access the channels that you are responsible for. Coordination with other agencies is an essential component of the narrowbanding process. If coordination does not take place, communications with other critical agencies may be compromised; this will prove especially damaging during emergency situations.

7) As soon as possible, schedule and coordinate with your radio service vendor dates and times for the actual system conversion (or cutover). Ensure that all radio users have been advised in advance and are aware of the process. Try to coordinate narrowbanding with regularly scheduled radio maintenance, if possible.

8) Finally, modify your FCC radio station license to remove any "wideband" emission designators, replacing them with the correct "narrowband" emission designators. This step may occur earlier in the process or at the end; regardless, it needs to take place before the process can be considered complete. Click here for instructions on how to modify your FCC license: http://vcomm.vermont.gov/sites/vcomm/files/Narrowbanding_-_FCC_Instructions__01_11_.pdf

Additional Information Resources:

The following resources or websites may provide additional information on narrowbanding.

1. **FCC Narrowbanding Website:** Includes a countdown clock, recent articles written about narrowbanding, links to helpful resources, and FCC contact information.(http://www.fcc.gov/pshs/public-safety-spectrum/narrowbanding.html)

2. **FCC Narrowbanding Mandate – A Public Safety Guide for Compliance:** A guide published by the International Association of Fire Chiefs and International Municipal Signal Association that provides guidance to State and local public safety entities on the requirements of the FCC Narrowbanding Mandate. (http://www.iafc.org/associations/4685/files/commComm_Narrowbanding.pdf)

3. **NPSTC Narrowbanding Website:** A comprehensive list of narrowbanding resources including technical briefs, articles about the narrowbanding process, the cost of

narrowbanding, and general fact sheets about narrowbanding. (http://www.npstc.org/narrowbanding.jsp)

4. **WirelessRadioNarrowbanding Website**: Provides information for FCC Part 90 Private Land Mobile Radio (LMR) licensees, dispatch system managers, consultants, integrators, sales and service facilities and end-users facing the narrowbanding deadline. (http://wirelessradio.net/)

5. **Vermont Communications (VCOMM) Narrowbanding Website:** Provides information about what narrowbanding is, how to prepare for the deadline, instructions on how to narrowband FCC licenses, and links to useful narrowbanding resources. (http://vcomm.vermont.gov/narrowbanding)