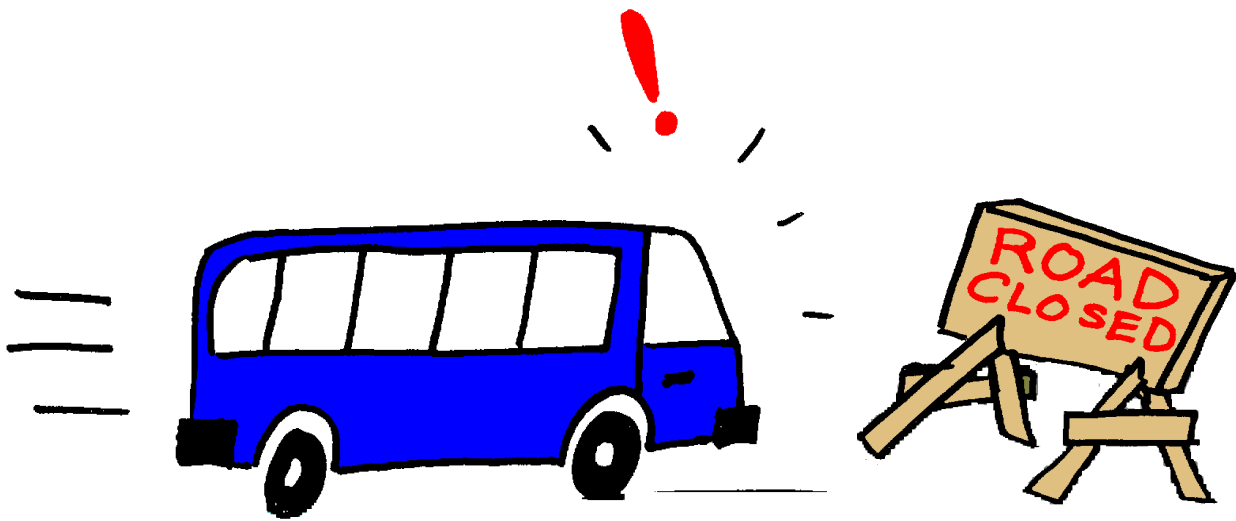


DRAFT
Strategic Plan for Meeting
Transit Industry
Wireless Communications Needs



Will your radios work in 2011 . . . 2013 ?!

October 5, 2008

Contents

Background 1

Draft Strategic Plan 2

Appendix A:
 Timeline of Regulatory Changes that Affect Private Radio Systems 5

Appendix B:
 Commercial Cell Phone Evolution in the US 6

Appendix C:
 Actions Needed to Meet VHF/ UHF Narrowbanding Mandate 7

Background

This Draft Strategic Plan has been developed under NAS project TCRP C-18 for the transit industry to assist in implementing mandated changes in spectrum allocations; optimizing use of new spectrum allocations; efficiently adapting to evolving private land mobile and commercial services; and assuring the industry's needs are considered in relevant rule changes. This draft plan has been developed in collaboration with APTA and CTAA to assure address of issues they view as primary for public transit wireless communications.

A strategic plan is a first step – it states the industry's communication goals in broad, visionary terms. Each strategic goal will be further detailed in the next step: development of an implementation plan. For each goal in the strategic plan, the implementation plan will include specific objectives that are measurable, actionable, relevant, and time-based (SMART). The details of industry needs and the implementation plan will be discussed and at a roundtable to be conducted as part of this project, in the first quarter of 2009.

We are striving to achieve industry consensus on a strategic plan for wireless communications prior to implementation plan development. It is hoped that the broadness of statements in this draft strategic plan will facilitate industry consensus. Furthermore, wide review of the appendices that accompany this draft plan may further promote industry awareness of critical communications issues.

To achieve broad industry review and commenting on this draft strategic plan, it will be presented at APTA committee meetings and copies will be disseminated at the APTA/TCRP booth during the annual APTA conference (October 5 – 8, 2008). Comments will be subsequently integrated, and the next draft will be posted with solicitation of feedback on the APTA and CTAA websites (target posting date: October/November 2008).

Please send comments on this plan and/or notice of interest in roundtable participation to the SAIC project manager:

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DRAFT
Strategic Plan for Meeting Transit Industry
Wireless Communications Needs

October 4, 2008

Preamble

This strategic plan is built on the wireless communications needs of the transit industry. It describes the vision, mission, and strategic goals for the next five years to effectively support the communication needs of the transit industry.

The rapid evolution of communications technologies is evident in the increasing variety of wireless services, and accompanying greater usage of the radio spectrum. Congress regulates radio spectrum through the Federal Communications Commission (FCC). In response to increased demand, the FCC has made additional spectrum available and is adapting regulations to optimize spectrum use.

To maintain its critical communications capabilities, and to take advantage of the growing opportunities offered by the wireless communication system (e.g., enhanced passenger services, real-time video and vehicle operation data, voice and data transfer among varied technologies, etc.), **the public transportation industry must monitor, respond, and adapt to:**

- **Changes in FCC regulations affecting spectrum licensed to transit agencies.**
- **Changes in commercial services that affect expectations for communications, and hence change the needs for communications.**

The transit industry must build partnerships with other radio spectrum user-groups and emergency response organizations to the benefit of public transportation communications. The future of public transportation communications depends on our collective voice, our commitment to action, and our adaptability to shifts in the environment impacting our industry. The vision and mission of this industry-wide strategic plan support our commitment.

Vision *Be the collective voice committed to addressing transit industry wireless communications needs.*

Mission *To assure that the transit industry wireless communications needs are continuously met through information sharing and advocacy.*

Defining our strategic goals, as presented below, is a first step in translating this vision into action.

The transit industry will use this plan to develop an implementation plan that will guide our actions, establish priorities, and align our resources. For each strategic goal listed below, the implementation plan will include specific objectives that are measurable, actionable, relevant, and time-based.

Strategic Goal 1: Private Radio Systems

Our first strategic goal is to ***respond and adapt to proposed and new regulations affecting the private radio spectrum in a manner that assures uninterrupted communications for transit agencies, and optimizes spectrum selection.*** A timeline of FCC regulatory changes affecting private land mobile radio systems (also referred to as two-way radio) is presented in Appendix A.

Specific regulation-based goals to be addressed within this heading include:

1. **UHF/VHF Spectrum** – Assure uninterrupted communications as private radio licensees operating in this spectrum implement mandated, phased-in efficiency standards (i.e., all licenses must be operating under new standards by January 1, 2013).
2. **800 MHz Band** – Optimize band use recognizing that some channels in this band have recently been designated for Public Safety use, and further recognizing that if these bands are not used, they will later be re-assigned for broader use.
3. **700 MHz Band** -- Optimize use of this band recognizing that a portion of the spectrum vacated by analog television on February 17, 2009, will become available to the Public Safety Pool (including public transit).
4. **Other spectrum for broadband application** – Optimize use.

Activities to meet these goals include, but are not limited to:

- **Expand Knowledge** -- Facilitate industry-wide knowledge of spectrum availability and licensing changes, equipment needs, funding and purchasing timeline needs, and recognition of soon-to-be obsolete equipment (both in-use, and on the market).
- **Pool Resources** -- Facilitate mechanisms for obtaining large-group purchase prices, with emphasis on small transit agencies.
- **Liaison Functions** – Provide responses to FCC requests for information and notices of proposed rulemaking.

Strategic Goal 2: COMMERCIAL SERVICES

Recognizing that more than 70% of the transit industry purchases commercial communication services (e.g., cell phone), our second strategic goal is to ***facilitate transit industry knowledge of relevant commercial communications advances to promote more informed decision-making for new equipment, system, and service purchases***. Activities to meet this goal include, but are not limited to:

- Tracking of commercial voice and data services including prioritization capabilities, and means of interoperability with other communication technologies.
- Periodic summarization of the potential applicability of various commercial services to the public transit industry, including advantages and disadvantages.

Strategic Goal 3: INDUSTRY NEEDS

Our third strategic goal is to ***represent transit industry needs in communications technology development and rulemaking to assure considerations of public transportation needs***. Activities to meet this goal include, but are no limited to:

- Tracking congressional legislation
- Tracking FCC notices, requests for information, and rulemaking
- Tracking transit industry wireless communications

APPENDIX A: Timeline of Regulatory Changes that Affect Private Radio Systems

Color Key:	UHF/VHF Users	700 MHz Band
	UHF/VHF Equipment	800 MHz Band

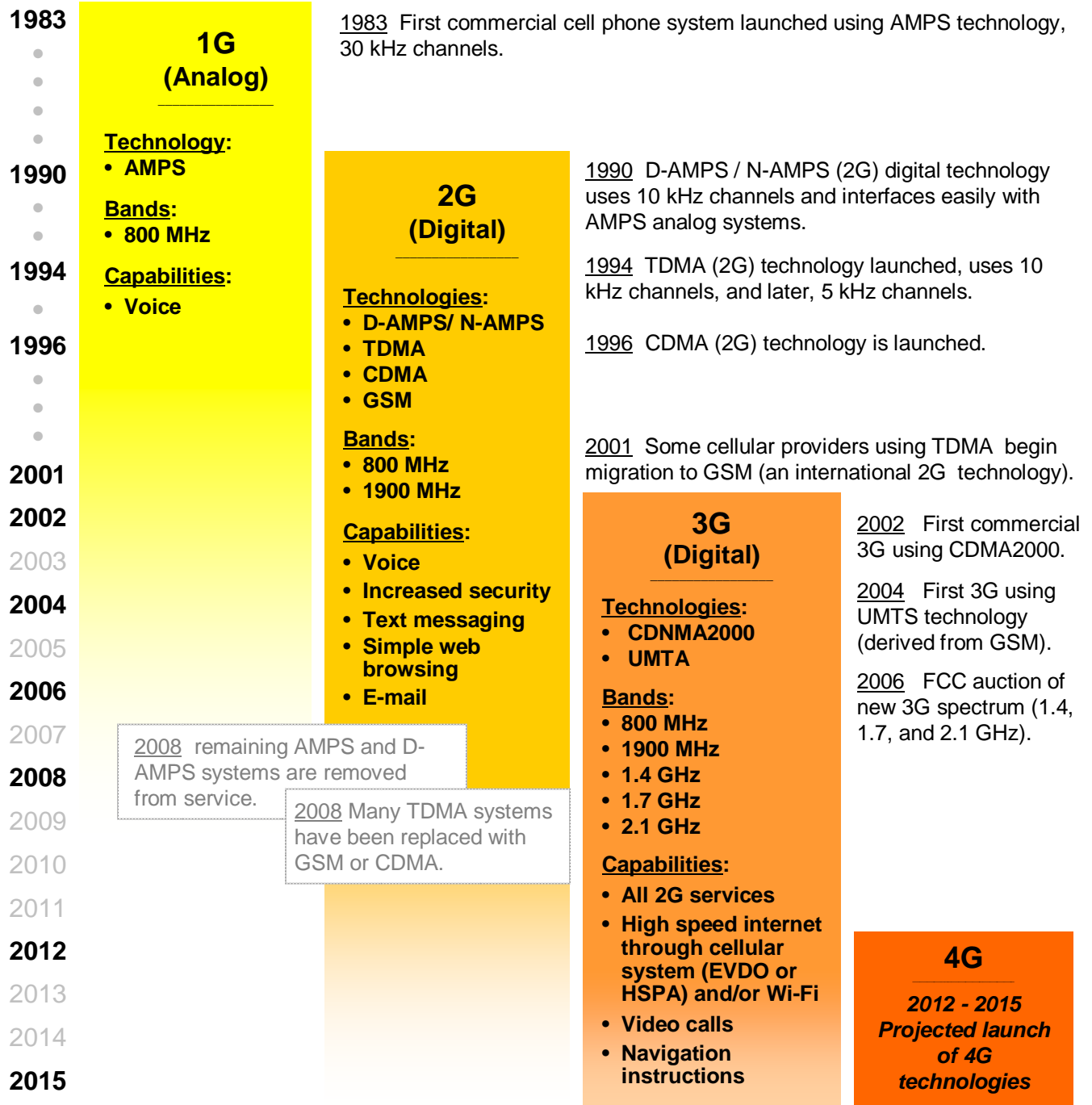
1997	<p>UHF/VHF Equipment Manufacturers: New Equipment Certification: FCC will only certify new VHF and UHF equipment capable of using 12.5 kHz bandwidth or less for voice, and 4800 bps per 6.25 kHz bandwidths for data. Dual mode that operates with both 25 kHz and 12.5 kHz channels is acceptable.</p> <p>UHF/VHF Users: Radio Service Consolidation The 20 radio services spread among 6 service categories are consolidated into two radio pools: Public Safety Pool; and Industrial/Business Pool.</p>
1998	<p>700 MHz Band: New FCC Service Rules / Transition to Digital TV in 2009 The 24 MHz of spectrum in the 764-776 MHz and the 794-806 MHz frequency bands (collectively, the 700 MHz band) is to be reallocated from television broadcast services to public safety general use and low power 6.25 kHz channels for voice and wideband 50 kHz channels for data and video.</p>
2005	<p>UHF/VHF Equipment Manufacturers: New Equipment Certification: <i>January 1, 2005 (Deadline suspended)</i> FCC will only certify new VHF and UHF equipment capable of using 6.25 kHz bandwidth or less for voice, and 4800 bps per 6.25 kHz for data. Dual mode that operates with both 12.5 25 kHz and 6.25 kHz channels is acceptable.</p>
2008	<p>800 MHz Band: Target Completion of Frequency Re-Configuration: <i>June, 2008 (partially met)</i> Partial completion of re-banding public safety licenses in the 800 band to reduce interference with Sprint's cellular systems. Public Safety will initially be given priority for cleared channels. Full completion expected in the 2011 to 2012 timeframe.</p> <p>UHF/VHF Users with Federal Licenses Implement New Efficiency Standards: <i>January 1, 2008</i> Federal licensees must implement voice channels of 12.5 kHz or less, and data channels with efficiency of at least 4800 bps per 6.25 kHz bandwidths. <i>This may cause interoperability issues with agencies using wider channels.</i></p>
2009	<p>700 MHz Band: Television Vacates Allowing New Public Safety Channels: <i>February 17, 2009</i> Regional wireless spectrum plans designate which channels within this band are available for Public Safety general use and low power 6.25 kHz channels for voice and wideband 50 kHz channels for data and video.</p>
2011	<p>UHF/VHF Equipment Manufacturers/ Importers: <i>January 1, 2011</i> Highband VHF and UHF equipment for voice channel widths greater than 12.5 kHz may not be manufactured or imported. <i>NOTE: Newly manufactured radios (e.g., in MY2011 buses) will not work with 25 kHz systems.</i></p> <p>UHF/VHF Users: New and Modified License Applications: <i>January 1, 2011</i> FCC not accept new applications or modified application for UHF/VHF systems operating on channels greater than 12.5 kHz for voice, and 4800 bps per 6.25 kHz bandwidths for data.</p> <p>800 MHz Band: Target Completion of Frequency Re-Configuration Substantial completion of re-banding public safety licenses in the 800 band to reduce interference with Sprint's cellular systems. Public Safety will initially have priority for use of the cleared channels.</p>
2013	<p>UHF/VHF Users: New Efficiency Standard Mandate becomes Effective, <i>January 1, 2013</i> All licensees must implement equipment with voice channels of 12.5 kHz or less, and data channels with efficiency of at least 4800 bps per 6.25 kHz bandwidths. <i>(Exception for 152.0075 and 157.450 MHz "paging-only" channels.)</i></p>
2018	<p>UHF/VHF Users: FCC Goal for Implementation of More Stringent Efficiency Standards <i>(Deadline suspended)</i> All licensees must implement equipment operating with voice channels of 6.25 kHz or less, and data channels with efficiency of at least 4800 bps per 6.25 kHz bandwidths.</p>

Appendix B: Commercial Cell Phone Evolution in the US

1G = First generation technologies
2G = Second generation technologies

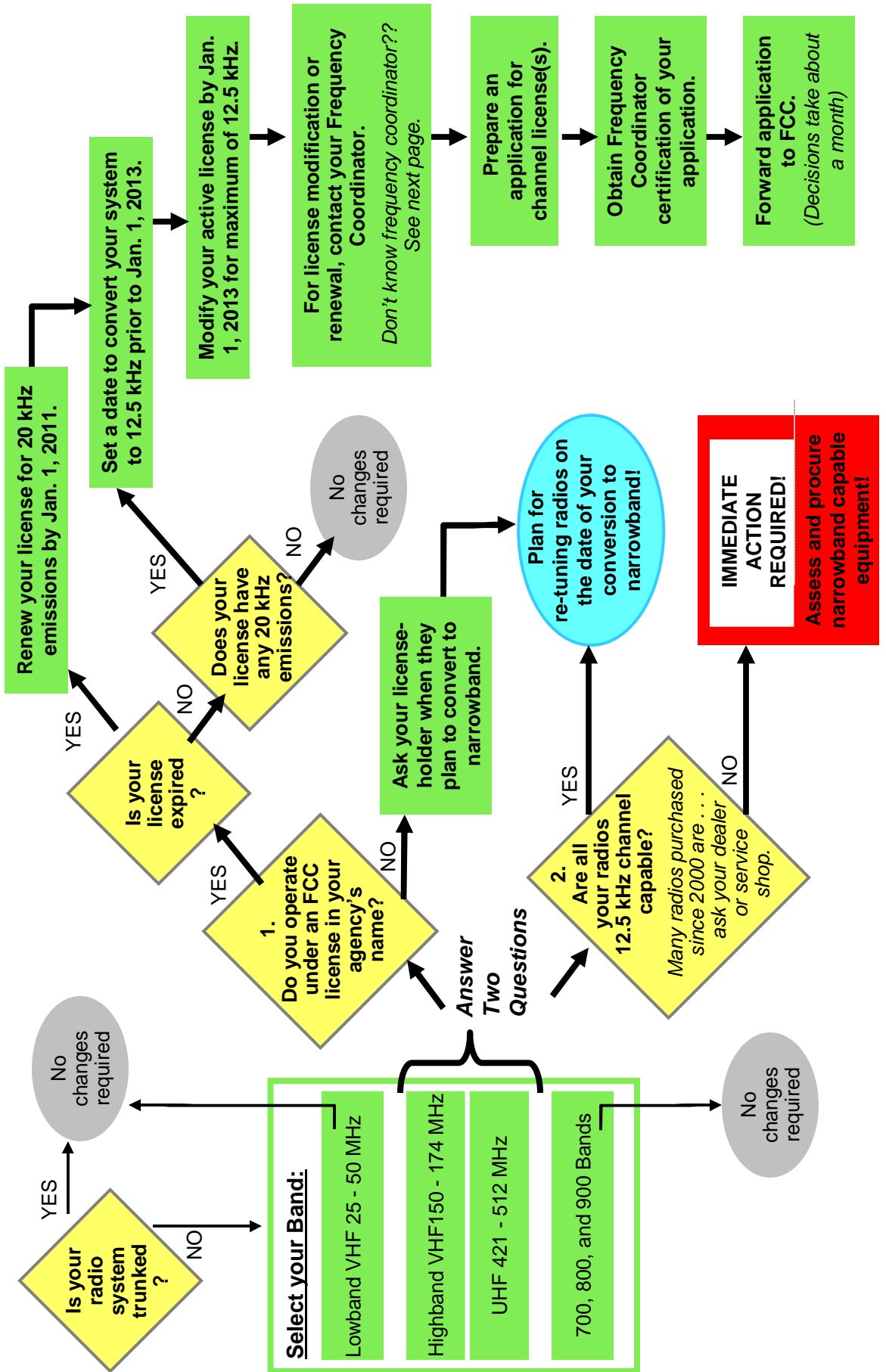
3G = Third generation technologies
4G = Fourth generation technologies

- *Evolving technologies increase the rate of equipment obsolescence.*
- *Competing technologies limit compatibility and roaming.*



Appendix C: Actions Needed to Meet Private (2-way) Radio Narrowbanding Mandate

58% of transit agencies risk losing radio communication if they do not convert to narrowband by January 1, 2013. **Are you one of them??**



Frequency Coordinators for Public Transit Agencies

The FCC has divided the wireless spectrum for land mobile radio communications into two pools based on whether the user is considered a “Public Safety” organization, or an “Industrial/ Business” organization. Each pool has different FCC-approved frequency coordinators. The frequency coordinators are responsible for assessing local availability of requested spectrum, and the relative likelihood of interference issues. In general, the pool that a transit agency falls under is determined by the agency’s ownership.

- **Government (Public) Ownership** -- Public Safety Pool.
- **Private Ownership** – Industrial/Business Pool.
- **Government/Private Partnerships** – depends on who submits the license application. To use the Public Safety Pool, the license application must be in the name of a government/ public organization. The government agency can then authorize use by a private company (authorization for private company use may not be allowed in the 700 Band). Otherwise, the Industrial/ Business pool should be used.

Lists of FCC approved frequency coordinators for each pool are provided below – the listed organizations can assist **any** license application in their respective FCC pool. The services offered by these organizations vary in price, breadth of service, and typical lead-time for application certification. Some of these organizations, and some separate, for-profit licensing companies offer full licensing services. Prior to choosing a frequency coordinator, transit agencies may want to send their application information to several coordinators and request a quote for processing.

PUBLIC SAFETY POOL FREQUENCY COORDINATORS

American Association of State Highway and Transportation Officials (AASHTO)

c/o Radiosoft
8203 W Currahee St
Toccoa, GA 30577-8533

phone: 888-601-3676

fax: 706-754-2745

email: info@ashtoradio.com

email: angela@radiosoft.com

email: kathigit@radiosoft.com

Association of Public-Safety Communications Officials, Inc. (APCO)

Automated Frequency Coordination Department
351 N. Williamson Blvd
Daytona Beach, FL 32114-1112

phone: 888-272-6911

fax: 386-322-2502

email: afc@apcointl.org

Forestry Conservation Communications Association (FCCA)

Attention: Michael Hutton
FCCA National Office
Post Office Box 3217
Gettysburg, PA 17325

phone: 717-338-1505

fax: 717-334-5656

email: nfc@fcc-usa.org

International Municipal Signal Association (IMSA)

200 Metro Center Blvd.
Suite 6
Warwick, RI 02886

phone: 401-738-2220

fax: 401-738-7336

email: fireems@imsasafety.org

INDUSTRIAL/BUSINESS POOL FREQUENCY COORDINATORS

AAA Frequency Coordination

c/o RadioSoft, Inc.
8203 W Currahee St
Toccoa, GA 30577-8533
P: 888-601-FORM
P: 706-754-1AAA
F: 706-754-2745
E: AAA@RadioSoft.com

Association of American Railroads (AAR)

Frequency Coordination
Attn: James Reimer
P.O. Box 11130
55500 DOT Road, P. O. Box 11130
Pueblo, CO 81001
P: 719-584-0578
F: 719-584-7145
E: james_reimer@aar.com

Central Station Alarm Association (CSAA)

Attn: Robert Bitton, President
1565 Union Avenue, P.O. Box 775
Union, New Jersey 07083-0775
P: 908-810-8822
F: 908-810-8844
E: bittonr@supreme-inc.com

Enterprise Wireless Alliance (EWA)

Attn: Frequency Coordination Department
8484 Westpark Drive
McLean, VA 22102
P: 703-528-5115
F: 703-524-1074
E: ila.dudley@enterprisewireless.org

Forest Industries Telecommunications (FIT)

1565 Oak Street
Eugene, Oregon 97401
P: Main Office: 541-485-8441
P: Chicago: 888-583-2-WAY
P: Dallas: 888-342-2-WAY
P: Los Angeles 888-355-2-WAY
P: WASH. D.C. 888-395-2-WAY
F: 541-485-7556
E: license@landmobile.com

Hydrological Federal Frequency

NOAA National Weather Service
Attn: Larry Wenzel
Office of Hydrology, W/OH22
1325 East-West Highway, Room 13415
Silver Spring, Maryland 20910
P: 301-713-0006

Manufacturers Radio Frequency Advisory Committee, Inc.(MRFAC)

899-A Harrison St., S.E.
Leesburg, VA 20175
P: 703-669-0320
F: 703-669-0322
E: info@mrfac.com
E: MRFACFreq@aol.com

Personal Communications Industry Association (PCIA)

Attn: Don Andrew, Frequency Coordination Department
500 Montgomery Street, Suite 700
Alexandria, Virginia 22314-1561
P: 703-535-7502
F: 703-836-1608
E: andrewd@pcia.com

Petroleum Frequency Coordinating Committee (PFCC)

c/o Enterprise Wireless Alliance
Attn: Frequency Coordination Department
Westpark Drive, Suite 630
McLean, VA 22102
P: 703-528-5115
F: 703-524-1074
E: ila.dudley@enterprisewireless.org

Utilities Telecom Council Spectrum Services (UTC)

1901 Pennsylvania Ave., N.W., Suite 500
Washington, DC 20006
P: 202-872-0030
F: 202-872-1331
E: spectrumservices@utc.org