

Beat the **FCC**

How to have fun planning your
narrowband future!

Agenda

- Are you affected?
- What & Why
- How and When
- Steps to Narrow Band
- Planning Materials

Are you Affected?

- Do you have a VHF (150-160 MHz) Radio System? - Yes
- Do you have a UHF (450-470 MHz) Radio System? - Yes
- Do you have a Low-Band (30-50 MHz) Radio System? You lucked out! No!
- Do you have an 800 MHz Radio System?
No! You do not have to Narrowband.

What & Why

- In approximately 1995, the FCC started a process to encourage more efficient use of the spectrum
- This was done by several methods including lowering power and reducing the channel size. In theory, allowing more users in the same spectrum
- Because it was voluntary, few people paid attention
- The FCC grew impatient with voluntary efforts and decided to make the change mandatory
- The primary driver for the equipment/system changes is the reduction in transmitter deviation and receiver bandwidth. Technical talk for using up less spectrum.

How & When

- In 2003,
 - FCC issued mandatory rules to require narrowband operation by 2013
 - No new wideband equipment after 2011
- Unknown exactly how FCC will “force” the conversion in 2013.
 - Could reissue existing license as narrowband
 - Could cancel wideband licenses
- One driver will be lack of new wideband user equipment after 2011
 - Narrowband equipment will not work well on wideband system and vice versa
- In summer 2010 FCC relaxed the requirement for no new wideband equipment after January 1, 2011. Wideband equipment will now be available until January 1, 2013. All other requirements stay the same.

Steps to Narrow Band

- Process has approximately 15 steps to complete narrowbanding process
- Some agencies may have simple process
 - Limited coverage area and existing coverage very good
 - New equipment
- Some agencies may have difficult process
 - Large coverage area and existing coverage has poor areas
 - Old equipment
- Will you hire a consultant or additional resources?

Raise Awareness

- Many users and elected officials are not aware of these requirements
 - Technical issues not well understood
 - "Head in Sand" approach
 - The FCC's not going to tell me what to do
 - What are your neighbors doing?
 - What about interoperability channels such as LERN, Rednet, HEAR, WHEERS, etc.?
- Costs may be significant depending on the overall effect
 - User equipment replacement
 - Infrastructure replacement
 - Additional Infrastructure

Secure Funding to Plan

- Approach will depend on system changes required
- Grant funding may not be available in enough time if available at all
- Users may not have adequate financial resources to replace their equipment
- Funding approaches general take time
 - Budget cycle
 - Bonding, levies, special taxes

Planning & Current State

- Evaluate staff resources
- Plan overall project
- Start system inventory
- Develop budget
- Get users involved

Evaluate Radio System

- Subscriber units
- Infrastructure
- Coverage
- Consoles - Not affected
- Antennas, transmission line, etc. - Not affected
- Base stations, voting receivers, repeaters - Affected

Identify Implementation \$'s

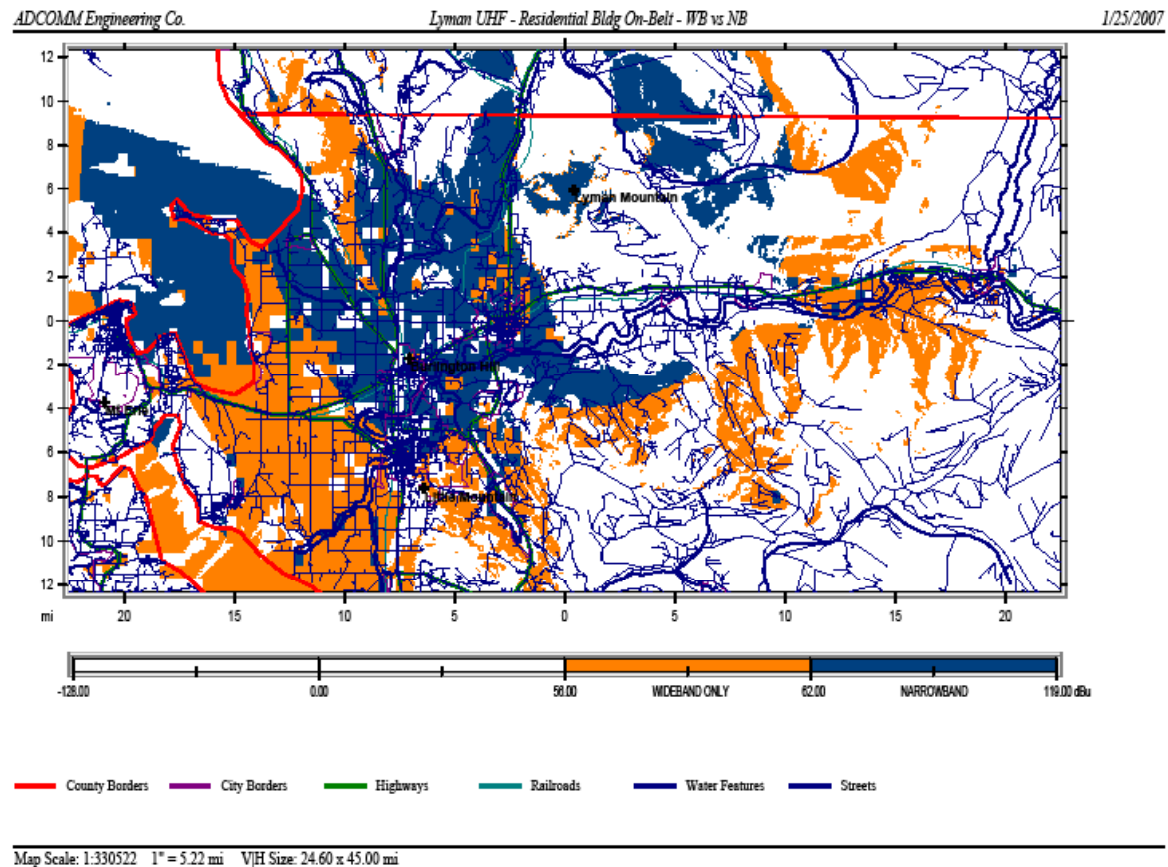
- Planning and education
- User equipment inventory and evaluation
- Staff support
- Engineering/transition planning
- Infrastructure
- User equipment
- License changes

How Will Your System Change?

- Coverage predictions
- New sites?
- System changes?
- Add frequencies?
- Add voting receivers?
- Convert to digital? Not required by narrowbanding

Coverage

- It will likely change



Get \$'s to Implement

- Identify funding sources
 - Internal
 - Capital reserves
 - Emergency funds
 - Council authorized bonds
 - Other tax revenue
 - External
 - Grants
 - Donations
 - Vendor financing
 - Bank financing

Develop Transition Plan

- Since wide/narrowband operation not possible on same system at same time, transition planning complex
- Who writes this and how do you get users to sign on?
- How to handle "foot draggers"
- High level to start but needs details for complex systems
- What are your neighbors doing?

User Radios

- Find funding, decide on procurement methods (all users procure through the comm center or each dept. get their own)
- Develop procurement specs, etc.
- Order mobiles, portables, etc.
- Install user equipment

Site Engineering

- Who will engineer the sites?
- What site changes are needed?
- Additional sites needed?
 - Locating sites
 - Negotiating access and leases
 - Permitting process
 - Site construction
 - Estimate 1-2 years
- Clean up and improve existing sites

Improve/Build Sites

- How will procurement be handled?
- Who will provide Project Management?
 - Internal staff
 - Radio vendor
 - Consultant
 - Other government agency
- Will be a “public work” contract

FCC Licensing

- Simple
 - Modify emission designators
- Complex
 - Add frequencies
 - Add sites
 - Change type of use e.g., base station to repeater
- Can take 3 months to 4 years or longer

Rehearse Transition

- Experience says at a minimum a table top exercise in "semi-real time" is the best approach
- Which time of the year is best? Note compliance date is January 1 so work needs to be completed before then
- Don't forget User training!

Installation

- Allow adequate time
 - User radio changes can take a long time if many units are involved
 - Limited vendor resources
 - It usually takes longer than you think
- Users will need to be involved with schedule
- Developing the radio programming is important. Radios may need to be programmed before and after transition

Getting ready for Cut

- Training
- System tuning, testing
- FCC Licensing received? If not, a Special Temporary Authority (STA) may be required.
- Adequate staff and vendor support available

Cut Over

- Stick to the plan, do not jump around
- Choose light traffic time
- May occur over an extended period of time if multiple frequencies and multiple sites are involved
- Lots of coffee, donuts, good karma

System Maintenance

- Congratulations if you made it this far!
- Tolerance for equipment off frequency, misadjusted, etc. less with narrowband
- Develop maintenance standards and have regular maintenance performed on both infrastructure and user equipment

Beat The FCC

- Quick review of the game board on other screen
- Game designed to introduce the players to the various tasks associated with narrowbanding
- Some element of chance involved
- The clock is ticking. It can be done by the deadline but "times a'wast'n"

Planning Materials

- Game Board
 - Game side
 - Planning side
- Game Pieces
 - Wire Nut - Director
 - Die - Element of chance - "Your Executive Board"
 - Disk - Time tracking element - Red for Fire, Blue for Law
- Planning Pieces
 - Dry Erase marker - Easy to make changes
 - Paper towels - Mistakes are easy to correct now hard later

1 AWARENESS is your first step. You've learned about narrowband and what it means, now get your Boards and Users up to speed.

2 Money makes the world go 'round! Find planning funds and convince Board.

3 Plan Project, Set Budget, Organize Users
Start System Inventory

4 Monitor Budget, Issue Reports, Manage Users....
Evaluate radio system

Board Meeting!

Roll a die and ADD 1 if you hired a Consultant.
If your total is:
1-2: Sorry, Board needs more time before approval. Advance the calendar 1 extra quarter, then continue with Task 3.
3-7 **Great Presentation!** Continue with Task 7.

5 Identify potential implementation funding sources Project mgt tasks
System change engineering Coverage change predictions Site changes

6 Develop Transition Plan
Calculate & secure funding for narrowband conversion

7 Help User agencies secure \$\$ for radio replacement
Order mobiles, portables and required other parts (mounts, batteries, etc.)

8 Review expected coverage
Identify & secure access to sites as needed

9 Site engineering
Improve existing sites
Develop new sites as needed

User communication
Budget management
Project management

10 Identify and order infrastructure:
base stations, antennas, towers, shelters, etc.

11 Find new frequencies
Apply for FCC licenses

Project Budgets, Status Reports, User meetings, schedule coordination, other
Project management activities

12 Rehearse / revise Transition Plan
Project management activities

Install & program infrastructure
Install subscriber units as needed

13 Tune, time and test the infrastructure
Train field & dispatch
Train technical staff

14 CUT OVER !!
Punch list items, remedial training, final acceptance
project close out



Questions?