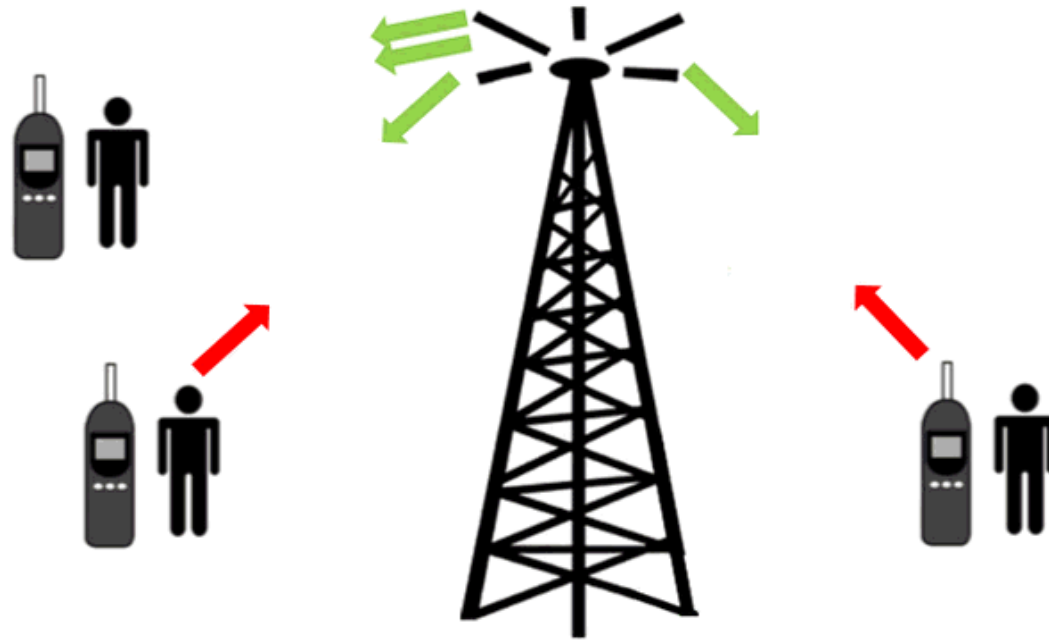


REPEATERS, WWARA & THE FUTURE

KU7M
N9VW & N7SS



What is a Repeater?

Who has heard of repeater coordination?

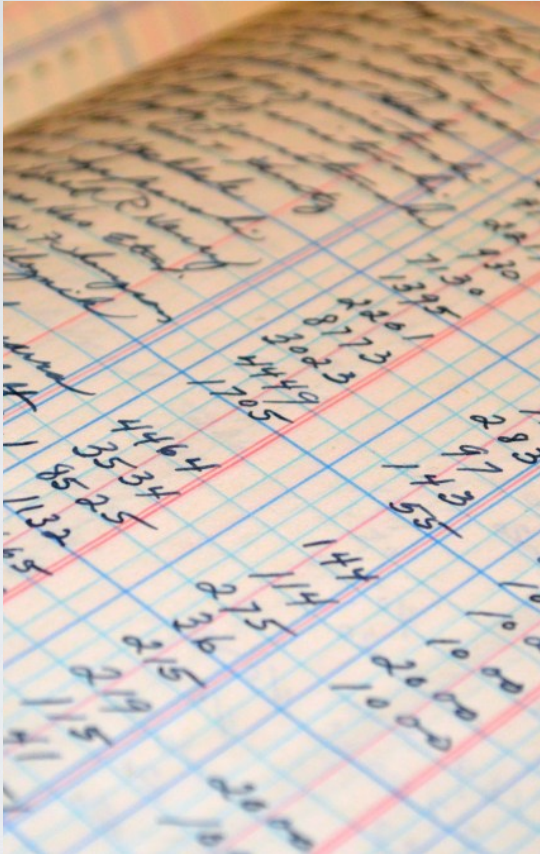




**None of
the above**

**Who authorizes
repeater coordinators?**

WHAT IS REPEATER COORDINATION?



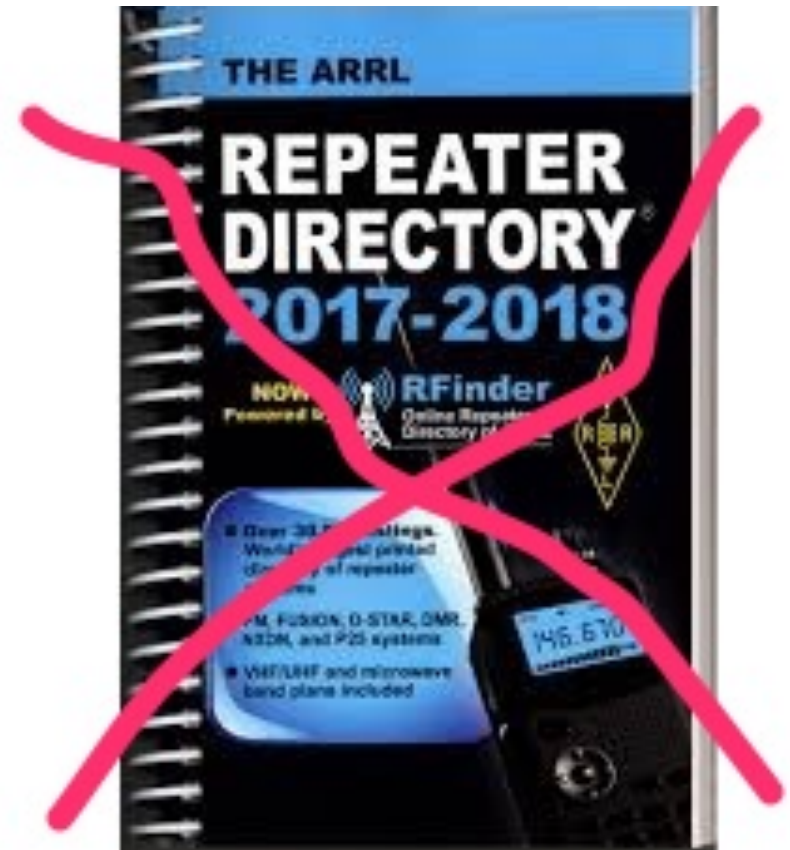
90% Bookkeeping



9% Arbitration

WWARA Benefits

- REPEATER LISTINGS
 - UPDATED NIGHTLY
 - VALIDATED / CHECKED
 - HUMAN VERSIONS
 - COMPUTER VERSIONS
- BAND PLANS FOR W. WASHINGTON
- ANYBODY CAN BE A MEMBER!
 - MEETINGS NOW HELD VIA ZOOM



The other 1%

THE FUTURE IS ALREADY HERE,
IT'S JUST NOT EVENLY DISTRIBUTED.

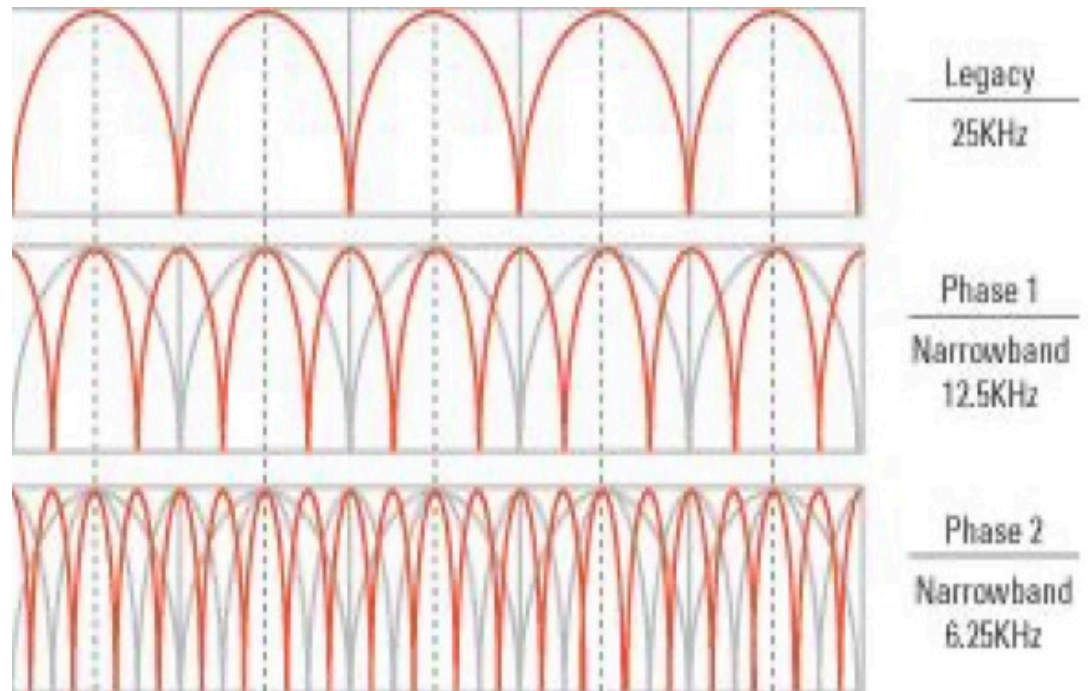
WILLIAM GIBSON

Repeater Timeline

- 1950's - AM repeaters
- 1970's - Shift to Analog FM repeaters
- 1989 - Project 25 started (P25 digital solution)
- 2005 - Icom introduced first DSTAR system (first open ham radio digital solution)
- 2007 - First DMR solutions released (encumbered commercial radio solution, adapted to ham radio)
- 2013 - FCC requires all commercial stations to go narrowband (12.5kHz)

Definitions

- Wide Band Analog
 - 5 kHz deviation
 - 16 kHz occupied bandwidth
 - 16K0F3E
- Narrowband Analog
 - 2.5 kHz deviation
 - 12.5 kHz occupied bandwidth
 - 11K2F3E
- Narrowband Digital
 - 8K10F1E, 9K80D7W, 9K36F7W, 7K60FXW, etc
- Ultra-Narrowband Digital
 - 6.25 kHz occupied bandwidth

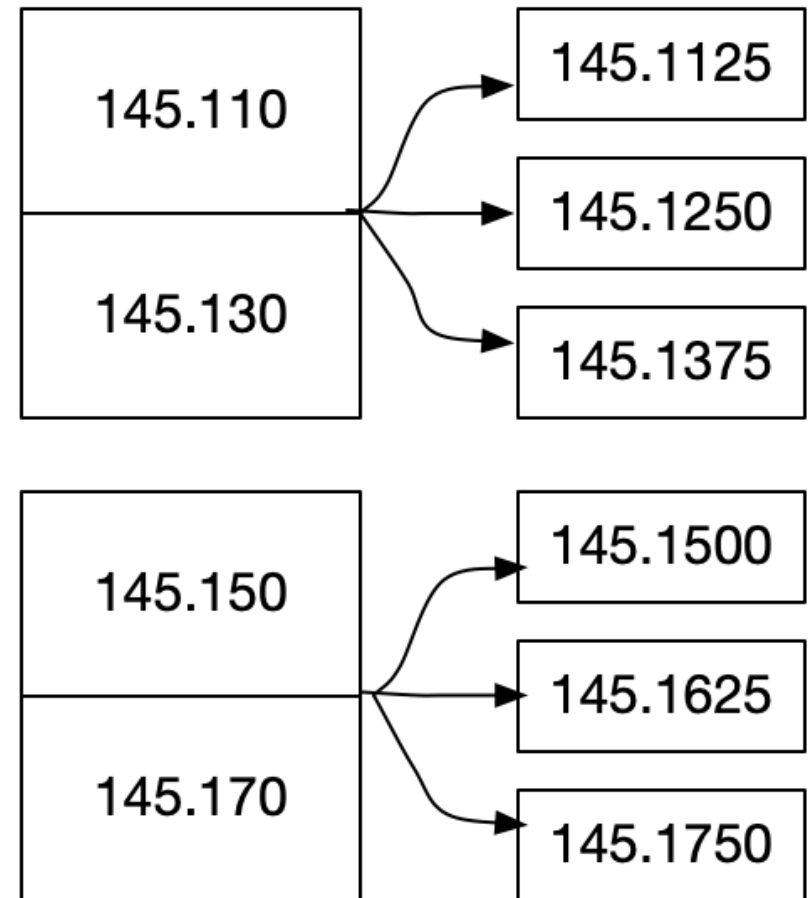


State of WWARA

- Commercial world shifted to narrowband in 2013
- Multiple digital (narrowband) solutions in use already for WWARA repeaters
- Hasn't been a 'open' 2m pair in over a two decades* and for the first time in 2018, all 440 pairs were in use.
- Coordinations of new repeaters has increased 23% since 2013, digital repeaters has increased 77% in the same time period. (hams want more repeaters)

Narrowband Proposal

- May 2019 - Public proposal to narrowband WVARA
- Provides band plan for 12.5 kHz channels for 2m and 440 bands
- 2m pairs increase ~30%, 440 pairs increases ~50%
- Currently 21% of 440 systems already narrowband



Thought Experiment

- In Two Years
 - A portion of the 440 band designated narrowband, no wide band systems renewed or coordinated
 - All existing narrowband repeaters shifted to new section, creating spots for dis-lodged wide to shift
- In Five Years
 - The WWARA stops accepting applications for new wide band analog systems
 - When wide band repeater shutdown, space held for narrowband
- In Ten Years
 - No wide band systems will be renewed, need to convert to narrowband or lose coordination

Links

- **WWARA Website** - <https://www.wwara.org>
- **Narrowband Proposal** - <https://tinyurl.com/wwaranarrowband>
- **E. Tiger 2m NarrowBand** - 146.875 (t) 103.5
- **My e-mail:** kenny@holenwall.com