



Public Safety Radio Systems

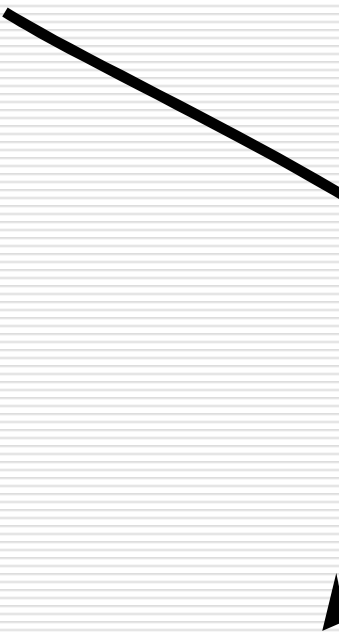
Where we came from, where we
are, and where *are* we going

APCO Rebuilding After Disaster Seminar

January 23, 2006

Ron Haraseth, Director APCO-AFC, Inc.

Recent History - Divergence

- Analog
 - One basic technology
 - Higher frequencies
 - 800 MHz (1980s)
 - 700 MHz (200?)
 - 4.9 GHz (2006)
 - Trunking (1980s)
 - Digital (late 1990s)
 - Many variations of technologies
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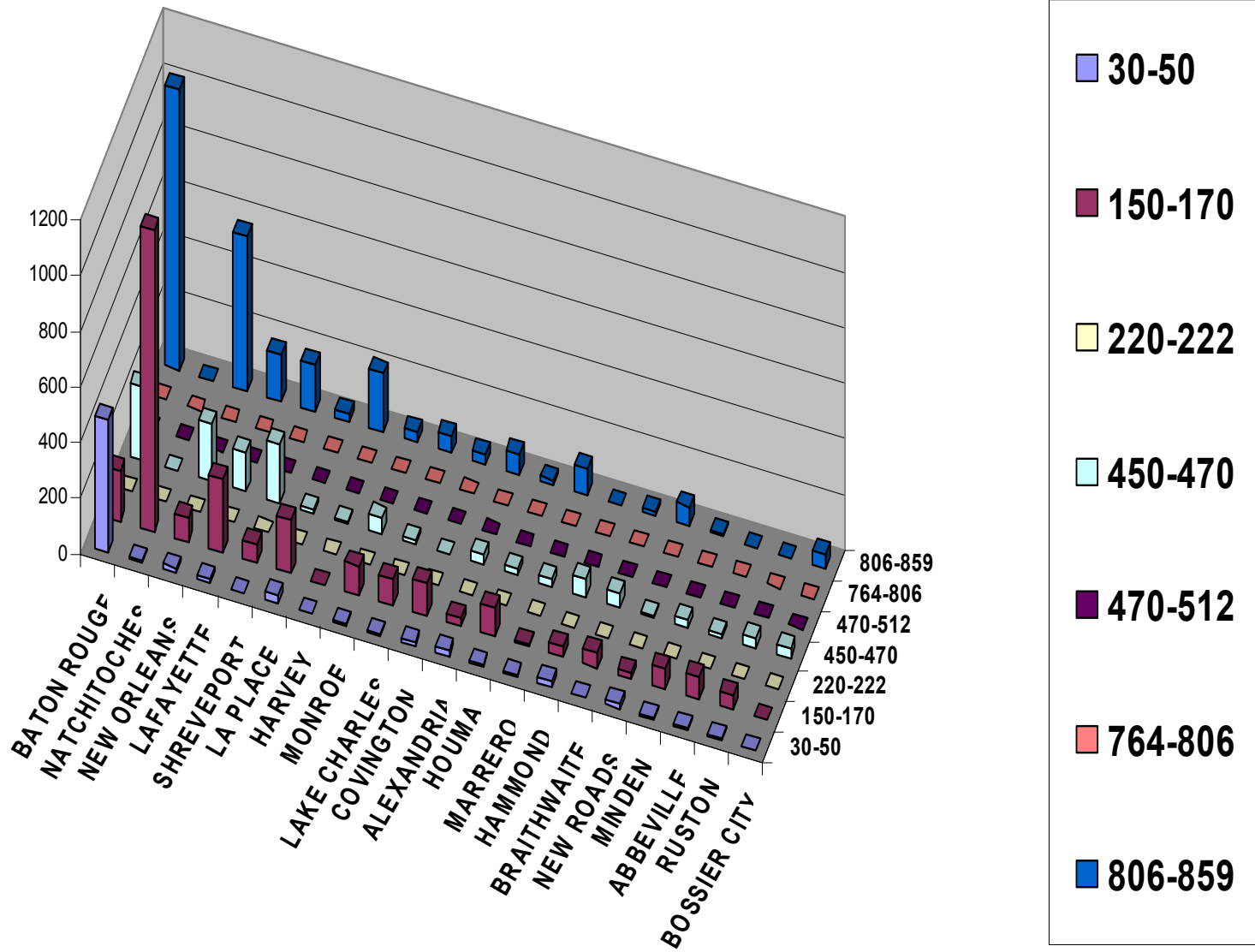
Public Safety Spectrum

A hodgepodge of frequencies

| Major Frequency Bands | FCC Allocated Bandwidth | FCC Issued Licenses |
|------------------------------|--------------------------------|----------------------------|
| ■ 30 – 50 MHz | 6.3 MHz | <u>78,456</u> |
| ■ 150 – 170 MHz | 3.6 MHz | <u>352,280</u> |
| ■ 450 – 470 MHz | 3.7 MHz | <u>191,909</u> |
| ■ 470 – 512 MHz | Varies by area* | <u>35,204</u> |
| ■ 806 – 869 MHz | 9.5 (6-NPSPAC) | <u>100,063</u> |
| ■ 746 - 806 MHz | 24 MHz | <u>NEW</u> |

*Certain TV bands limited to specific urban areas

Top 20 License Holders by Parrish



Future Technology

□ 700 MHz - **Narrowband**

- Regional Planning Committee Frequencies (RPCs)
- State Licenses (For wide area shared system development)
- 6.25, 12.5, or 25 KHz bandwidth

□ 700 MHz - **Wideband**

- Reserved channels for up to 500+kb speed
 - 50, 100, or 150 KHz bandwidth
 - (Possible 1.25 MHz channel overlay of PS 700 MHz)
-

Future Technology

- ❑ **4.9 GHz Broad Band** - Wi-Fi Exclusive for Public Safety

- 18 channels ranging from 1 to 5 MHz bandwidth

- ❑ Any/all agencies eligible

- Concurrent licensing with shared service area

- ❑ Directly licensed

- Does not require coordination (other than local)

- T-1 speeds - 1 and 5 MHz channel bandwidth

- Mobile & temporary fixed

- ❑ Wireless LAN hotspot, Mobile data, Wireless video

- Permanent fixed point-to-point (T1 level)

- Secondary to mobile & temporary fixed

Not eligible for public access (Muni-WiFi)

www.apcoafc.org look for “**Broadband and 4.9 GHz**”

Commercial Wireless Broadband

- Wi-Max
 - 802.16, 802.20 standards
 - OFDM - EVDO (Wide CDMA)
 - Major carriers (Cellular)
 - (Possible channel overlay of PS 700 MHz Wideband)
 - High speed download
 - Excess TV channel capacity
 - HSPDA - dedicated
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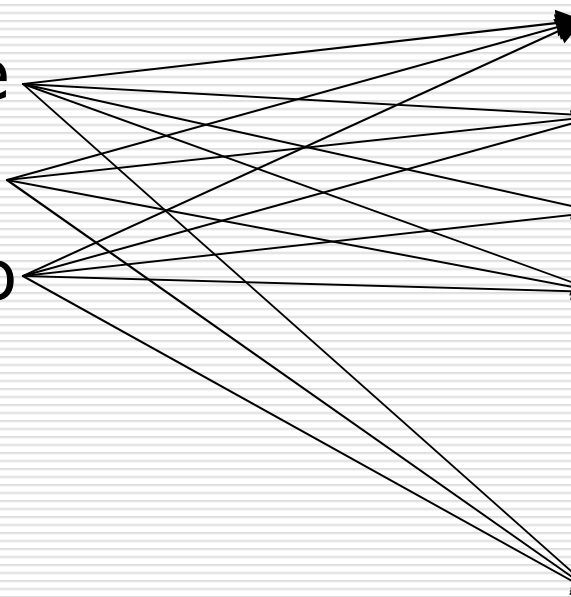
Convergence

Multiple applications

- Voice
- Data
- Video

Multiple networks

- Conventional
- Wideband
- Broadband
- Non-symmetrical
- Uplink – Downlink
- PS & Commercial



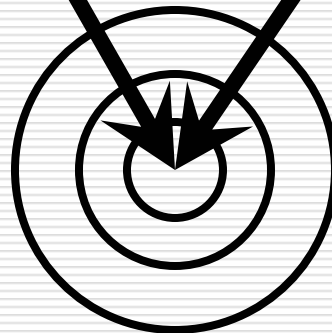
Convergence

Multiple
Disciplines

- Police
- Fire
- EMS

Multiple
Municipalities

- City
- County/Parish
- State



Interoperability

Cooperation

- All of the above
-

HINT!!!

Don't buy a single radio –

Until you know there are
frequencies available and
what your neighbors are
doing!



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