

# **900-Megahertz Radio Technology Choices and Recommendation**

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**Planning and Public Policy Committee Meeting  
Feb. 22, 2023**



# LCRA's Telecommunications Network Consists of Radios and Wired Network Communication

## RADIO SYSTEM

Carries push-to-talk voice communications and data services



**We provide private mission-critical data and voice services to LCRA and customers in our service territory**

## TRANSPORT NETWORK

Carries data for LCRA and customers using cables, fiber and microwave; also used by the radio system

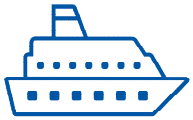


# LCRA's Radio System

- More than 180 cities, counties, electric utilities and other public safety entities use the LCRA radio system
- Uses both the 700-megahertz and 900-MHz frequency spectrums
- Radio coverage reaches more than 55,000 square miles
  - Second largest 900-MHz radio network in Texas
  - Second largest shared 700-MHz radio network in Texas by geographic footprint, and one of the top five public safety service providers by user count
- 700-MHz spectrum is limited to public safety-related uses



# Radio Spectrum With 700-MHz and 900-MHz Frequencies



Maritime radio, navigation



Maritime radio, navigation



AM radio, aviation, radio navigation



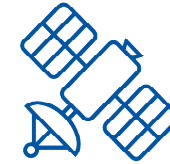
VHF television, FM radio



UHF television, mobile phones, GPS, Wi-Fi, 4G



Microwave



Satellite communications, Wi-Fi



Radio astronomy, satellite, communications

Lower frequency

Higher frequency

3 kHz

30 kHz

300 kHz

30 MHz

300 MHz

3 GHz

30 GHz

300 GHz

700 MHz | 900 MHz

*Higher frequencies provide faster information (data) transfer*



kHz: kilohertz

MHz: megahertz

GHz: gigahertz

# **Are We Talking About Broadband?**

- **Broadband can refer to newer radio technology or fiber or copper wires**
- **The broadband we're talking about today is radio technology**
- **The term “broadband” also is used when talking about fiber**
  - We'll discuss the status of our fiber broadband business in a later meeting

# 900-MHz Radio Use

- We use an older, “narrowband” technology in the spectrum, called OpenSky
- 900-MHz band is used for day-to-day and emergency operations for LCRA, as well as for more than 100 external customers
  - LCRA operations
  - LCRA Hydromet system (more than 275 sites)
  - Electric cooperatives
  - Cities, schools and colleges
  - Transit authorities
- Radios provide many talk groups (channels) that can be used anywhere in the footprint

7,800 radios in 61 counties and more than 50,000 square miles



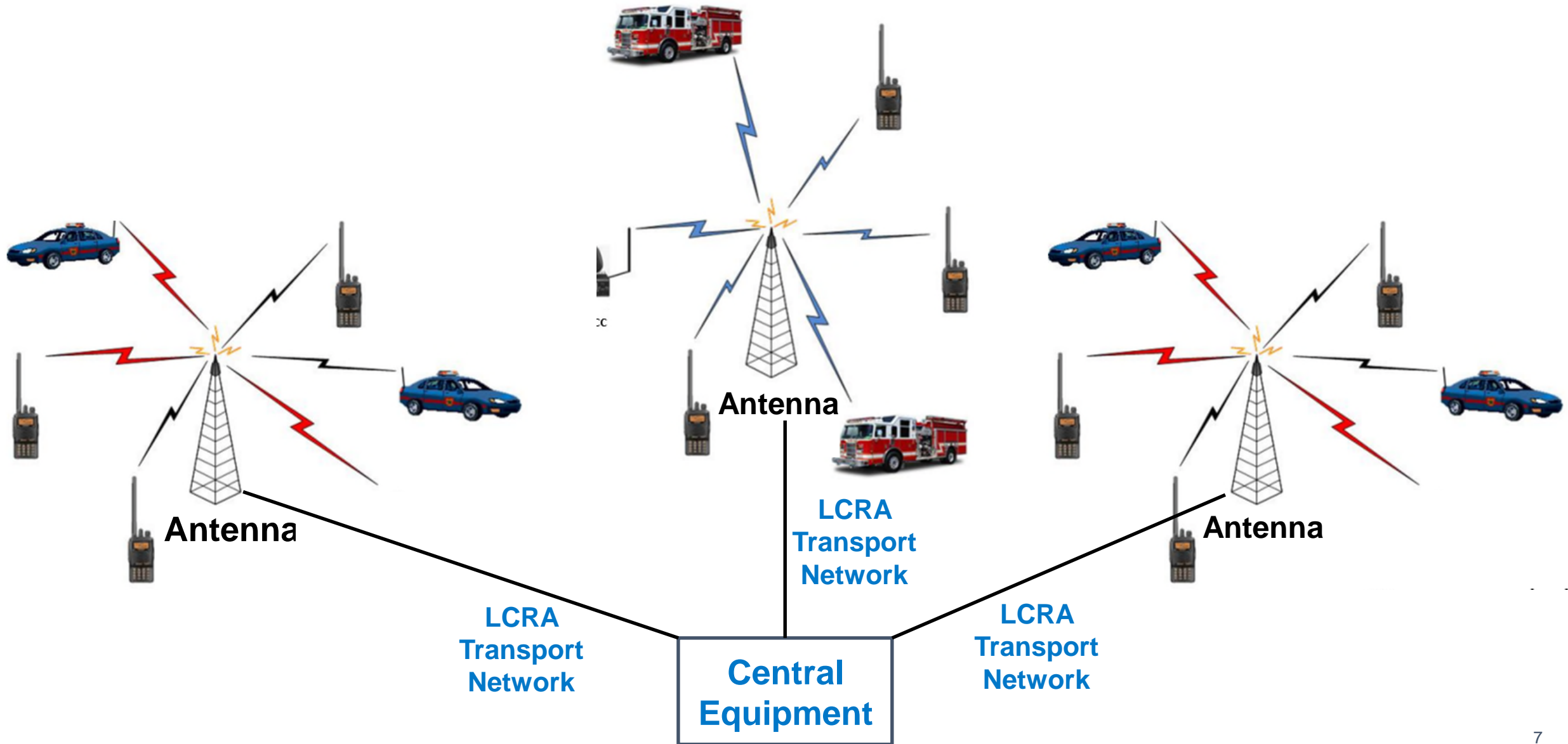
# Current Radio Users

## (700-MHz and 900-MHz users)

Category of customer	Number of customers	700-MHz radios	900-MHz radios	Total number of radios
<b>LCRA</b>	<b>1</b>	<b>168</b>	<b>1,913</b>	<b>2,081</b> (14% of total)
First responders	158	5,047	1,009	6,056
Cities	54	387	231	618
School districts/colleges	12	146	1,334	1,480
Transit authorities	2	-	1,735	1,735
Electric cooperatives	12	24	1,519	1,543
Counties	21	1,824	51	1,875
<b>Total</b>	<b>260</b>	<b>7,596</b>	<b>7,792</b>	<b>15,388</b>
<i>Additional non-LCRA radios that can use our radio network</i>		15,091	33	15,124

Numbers as of about Jan. 20, 2023

# How LCRA's Radio System Works





# The 900-MHz Challenge

- **In 2020, the Federal Communications Commission – which regulates the radio spectrum – repurposed the 900-MHz band that we use; these changes affect us**
  - Designated portions of the 900-MHz narrowband spectrum to be realigned to allow for broadband use, specifically 3G LTE (third generation long-term evolution)
- **3G LTE provides for high data transfer speeds**
  - Our radio technology in use now – narrowband – has very slow data transfer speeds (almost equal to voice and like an old computer modem)
  - 3G LTE has much faster data transfer speeds, but still slower than needed to stream full-motion video

# The 900-MHz Challenge (Continued)

- **The FCC exempted LCRA, along with nine other electric utilities across the country, from mandatory realignment to LTE**
  - However, we cannot expand our 900-MHz footprint. The FCC will not grant any new, additional narrowband licenses
- **Five of those exempted utilities already are transitioning to 900-MHz LTE use**
  - Only LCRA and four other utilities have not moved to LTE
  - Two other major utilities have leased spectrum for private LTE even though they had no prior operations in the spectrum

# **The 900-MHz Challenge (Continued)**

- **We believe the FCC will eventually remove this exemption**
  - Likely would result in LCRA being required to move off 900 MHz or realign its 900-MHz narrowband spectrum to allow broadband use
- **There is no “do nothing” option for the future**
  - We must eventually transition all or part of our 900-MHz narrowband use to another solution(s)
  - Currently, the 900-MHz narrowband spectrum we own does not allow us to use it for broadband LTE operations
- **Operating LTE broadband would require LCRA to trade or buy channels to realign our spectrum**



**LCRA**

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