

Memorandum



Date: October 29, 2010

To: Mayor Pro Tem Dwaine Caraway, Chair
and Members of the Public Safety Committee

Subject: Modernization of Dallas' Radio Network

The Public Safety Committee will be briefed on the Modernization of Dallas' Radio Network on Monday, November 1, 2010.



Jill A. Jordan, P.E.
Assistant City Manager

Attachment

c: Honorable Mayor and Members of the Dallas City Council
Mary K. Suhm, City Manager
Deborah Watkins, City Secretary
Tom Perkins, City Attorney
Craig Kinton, City Auditor
Victor Lander, Administrative Municipal Judge
Ryan Evans, First Assistant City Manager
A.C. Gonzalez, Assistant City Manager
Forest E. Turner, Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Helena Stevens-Thompson, Assistant to the City Manager Mayor/City Council Office

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Modernization of Dallas' Radio Network

Briefing to the Public Safety Committee

November 1, 2010



Purpose

- Discuss the current state of the City of Dallas Radio Network
- Federal Communications Commission (FCC) narrow band requirements.
- State of Texas Project 25 (P25) compliance
- Consolidated implementation roadmap for narrow banding and P25 standards.
- Review the November 10, 2010 Council Agenda Item
 - on purchase of radios
 - on FY10 Homeland Security Grants

Glossary

- Frequency – is the location of a radio signal that contains desired information.
- Transmitter – is an electronic device that sends a radio signal through an antenna.
- Receiver – is an electronic device that receives a radio signal from an antenna.
- Analog – is a process of taking audio (human voice) signals and translating them into electronic pulses called frequency modulation. The frequency modulation produces a continuous wave with the voice signal.

Glossary

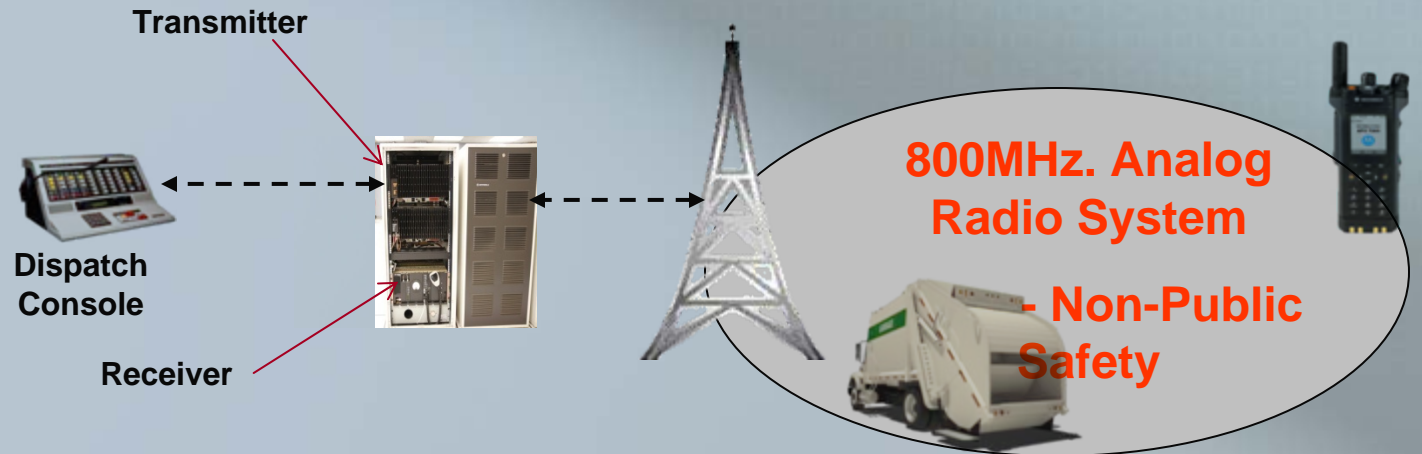
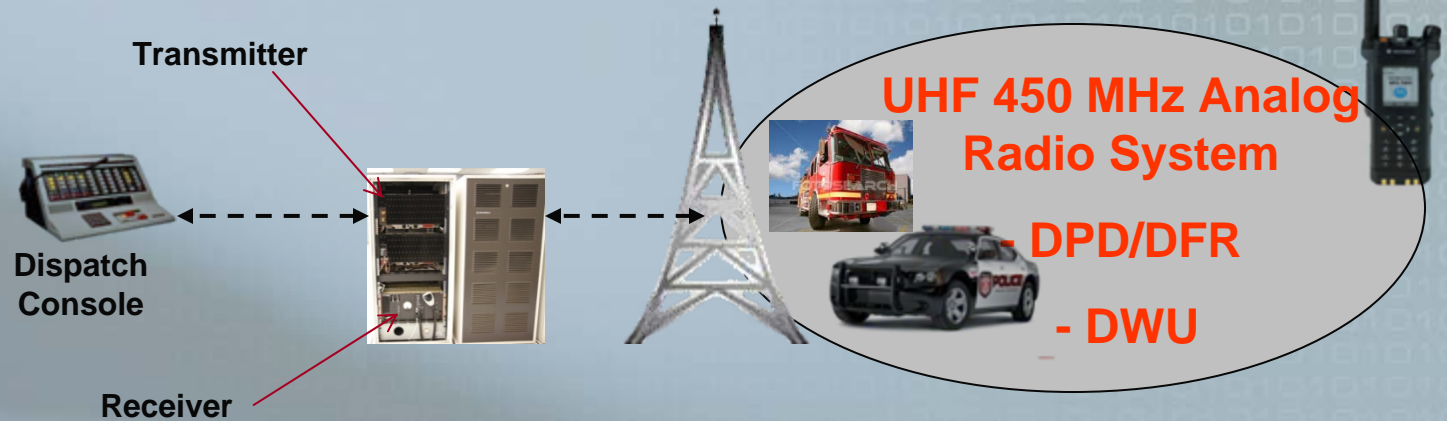
- Digital - is a process of taking an audio signal and breaking it up into a binary format represented as "1"s and "0"s.
 - For example, it's similar to the recent change in televisions from the old "rabbit ear" (analog) antennas to the cable box (digital).
- Narrowband – Is taking the current "wideband" frequencies and creating new narrower frequencies in order to relieve congestion.
 - For example, it's taking one large highway ("wideband") and designating specific driving lanes, separating the different types of traffic which eliminates the congestion of one large lane.
- Project 25 (P25) - is a digital industry standard developed by Home Land Security to ensure radios made by different manufacturers communicate with each other; these radios are interoperable.

Current State of City's City Radio Network

- Over 40 years old radio network.
- The network consists of:
 - 11,000 Radios
 - 700 Receivers
 - 400 Antennas
 - 250 Transmitters
 - 23 Towers
- Radio system is divided into two segments:
 - Public Safety and DWU
 - Other Civilian departments

** The difference between these two segments is that they are on two different frequencies. i.e., they can't talk to each other

City of Dallas Current Radio Network



Current State of City's City Radio Network

- City Radio System (Public Safety and Civilian):
 - ❑ Wideband not narrowband
 - ❑ Analog not digital
 - ❑ Limited Interoperability
 - ❑ Not P25 compliant

- 70% of City's radio equipment is currently not supported by the manufacturer; remaining equipment will no longer be supported after 2012.

- Coverage is inadequate
 - ❑ Some areas have weak signal strength
 - ❑ Poor coverage inside buildings exists throughout the City

Current State of City's City Radio Network

- Limited interoperability with surrounding first responders such as:

- ❑ Denton County
- ❑ Collin County
- ❑ Irving
- ❑ Arlington
- ❑ Fort Worth
- ❑ Contiguous Mutual Aid Cities

Addison

Grand Prairie

Balch Springs

Highland Park

Carrollton

Hutchins

Cedar Hill

Irving

Cedar Hill

Lancaster

Cockrell Hill

Mesquite

Coppell

Plano

DeSoto

Richardson

Duncanville

Seagoville

Farmers Branch

University Park

Garland

Wilmer

Federal Communications Commission

Narrowband Requirements

- FCC Requirements
 - Mandates that all public safety radio systems be “narrow banded” by January 1, 2013.
- Failure to comply with the narrowband January 1, 2013 deadline may result in the following:
 - Substantial FCC fines
 - Revocation of FCC wideband Licenses
 - Wideband transmitters may overload narrowband receivers in adjacent municipalities.

Federal Communications Commission

Narrowband Requirements

- The COD will achieve the FCC narrowband requirements by:
 - Replacing handheld and mobile (in-vehicle) radios.
 - 6000 Public Safety radios
 - 1000 DWU radios
 - ⇒ *Note:* DWU radios must be replaced because DWU is on the same segment of the radio network as DPD and DFR.
 - ➔ *Note:* These radios will work with the current network as well as the future P25 network, regardless of the manufacturer.
 - Reprogramming the radio network receivers and transmitters.

State of Texas

P25 Compliance Program

- The State of Texas has set the goal that radio communications of all first responders be P25 compliant by January 1, 2015
- Cities in Texas that have implemented/implementing the State's P25 goal:
 - Austin..... Implemented
 - McKinney..... Implemented
 - Plano-Allen-Wiley..... Implemented
 - Frisco..... Implemented
 - Houston..... In Progress
 - Waco..... In Progress
- Major Cities in Texas that have not started implementing the State's P25 goal:
 - Dallas
 - Fort Worth
 - San Antonio
 - El Paso

State of Texas

P25 Compliance Program

- The COD will achieve the State of Texas P25 compliancy goal by:
 - Replacing 4000 Non-Public Safety radios
 - ⇒ Note: The 7000 radios purchased to achieve the FCC narrow banding mandate do not have to be replaced.
 - Replace all the Transmitters and Receivers
 - Install new Antennas
 - Modify 3 small towers and install one new tower
- ⇒ Note: This will require a substantial capital investment.

Challenges

- The COD current radio equipment:
 - ❑ The current is equipment old
 - ❑ Transmitters
 - ❑ Receivers
 - ❑ Does not meet the FCC narrow band mandate.
 - ❑ Is not P25 compliant.

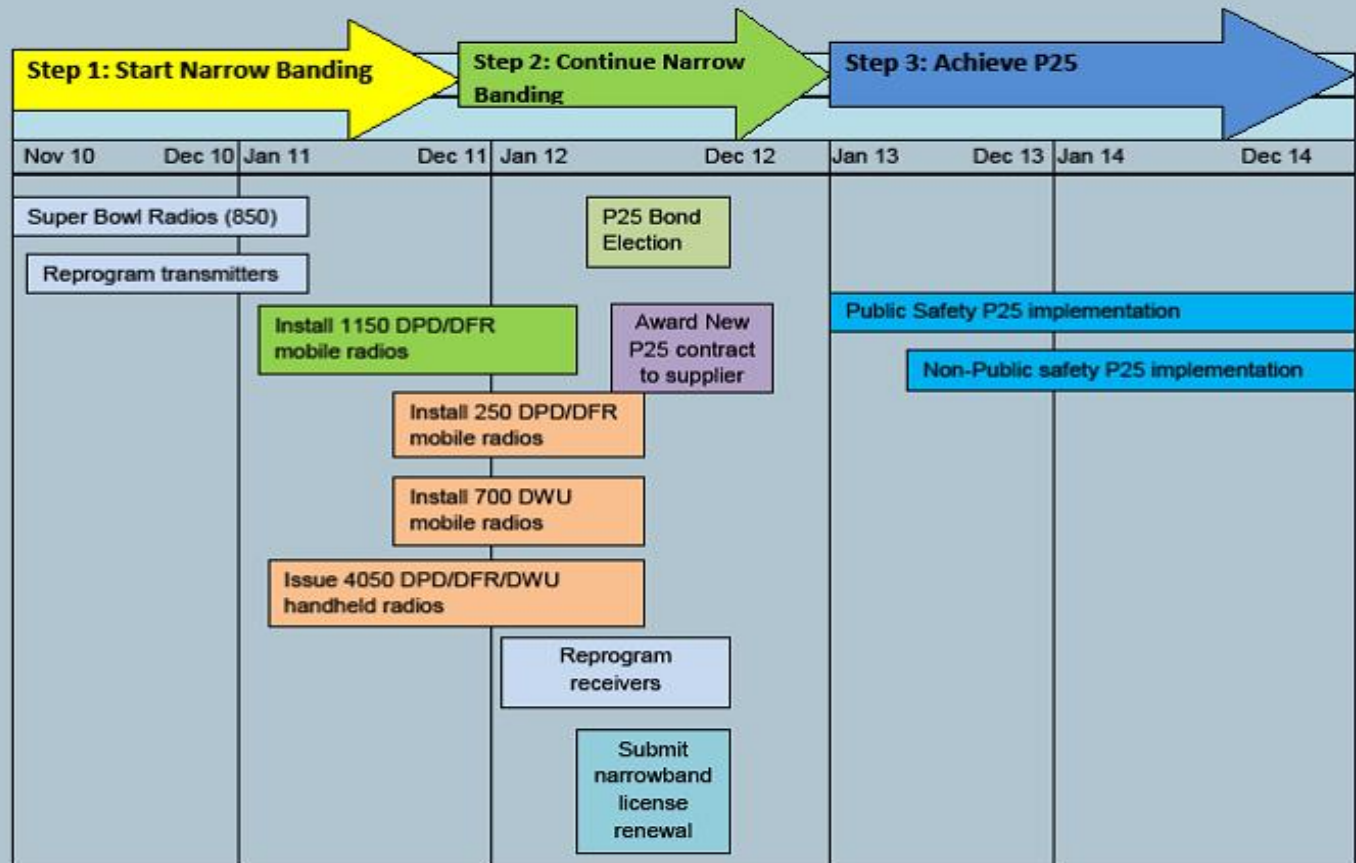
- Currently 70% of the radio equipment is not supported and the other 30% will not be supported after 2012.
 - Non supported radio equipment means:
 - ❑ The manufacturer will not provide maintenance
 - ❑ No new replacement parts will be made
 - ❑ Search eBay and/or barter to replace any broken parts

Challenges

- Although the City will have new radios the Radio Network equipment will not be supported by the manufacturer after 2012.
- Planning, procuring the equipment timely and funding are crucial in meeting Federal and State requirements.



Narrow Banding and P25 Consolidated Implementation Roadmap



Narrow Banding and P25 Consolidated Implementation Roadmap

■ Step 1 – Start Narrow Banding Process

- Council Agenda Item to buy 2000 radios Nov 10, 2010
- 850 radios for the Super Bowl Jan 2011
 - 815 handheld radios
 - 35 radios installed on the motorcycles.
 - ⇒ Note: These radios are necessary to achieve interoperability during the Super Bowl with the other public safety municipalities, i.e. Arlington, Fort Worth
- Install 1150 mobile radios for narrow banding ... Dec 2011
- Cost -----→ \$8,729,329

Narrow Banding and P25 Consolidated Implementation Roadmap

- Step 2 – Continue Narrow Banding Process:
 - Procure and install an additional 5000 Radios
..... Nov 2011 – Jun 2012
 - Reprogram transmitters and receivers
..... Jul 2012 – Dec 2012
 - Submit Narrow Band License Renewal to FCC
..... Dec 2012
 - Cost -----→ \$21,498,191

Note: Radios purchased for narrow banding will work with the current system and the future digital system, regardless of the manufacturer.

Narrow Banding and P25 Consolidated Implementation Roadmap

- Step 3 -- Achieve P25 goal
 - Council Agenda for hiring a consultant to develop P25 RFCSP Jan 2011
 - Hold Bond Election Nov 2012
 - Council Agenda – award of P25 Project Nov 2012
 - P25 digital Network Implementation
 - Public Safety..... Dec 2012 – Dec 2014
 - Non-Public Safety Oct 2013 – Dec 2014
 - Estimated Cost -----→ \$99,333,755



Funding Sources for the Roadmap

- The \$27,064,450 Public Safety Grant funds over the next 3 years will pay for all the needed handheld and mobile radios.
 - ⇒ *Note:* This is a one time purchase because the radios work with the current system and any future digital system, regardless of the manufacturer.
- The new P25 Radio network cost of approximately \$99,333,755 is a one time turnkey project and will require capital bonds or other funding sources.

Funding Sources

State of Texas P25

| | Estimated Cost and Funding Source | | |
|---------------------------------------|-----------------------------------|---------------------|-------------|
| | Grants | Bonds/Other Sources | DWU |
| Step 1: Super Bowl and Narrow Banding | | | |
| ▪ Radios | \$ 8,729,329 | | |
| | | | |
| Step 2: Continue Narrow Banding | | | |
| ▪ Radios | \$17,035,121 | | \$3,163,070 |
| ▪ Consulting Services | \$ 1,300,000 | | |
| | | | |
| Step 3: P25 | | | |
| ▪ Public safety digital network | | \$89,505,875 | |
| ▪ 4000 Non-public safety radios | | \$ 6,840,380 | |
| ▪ Non-public safety digital network | | \$ 2,987,500 | |
| | | | |
| Total Estimated Cost | \$27,064,450 | \$99,333,755 | \$3,163,070 |

Council Agenda Items

November 10, 2010

- The Council will consider two agenda items related to radios on its November 10th agenda.
 - Authorize a price agreement for the purchase of 2000 P25 compliant radios at the cost of \$8,723,971
 - These radios can operate on the City's old analog radio network and the future P25 radio network
 - Are for DPD and DFR.
 - Authorize the acceptance of the FY10 Homeland Security Grant funding of \$10,112,071.60

Homeland Security Grant Funding

- On November 10th, Council will be asked to accept the FY10 Homeland Security grant for \$10,112,071.60
- Major projects include:
 - Continued Public Safety Radio upgrades to P25 standards (\$6.8 M)
 - Equipment upgrades, training, and exercises for Bomb Squad, US&R, and HazMat (\$913 K)
 - Technology upgrades and information services for the Dallas Fusion Center (\$2.4 M)

Note:

Grant
Radio

The State of Texas has mandated that no Federal Funds will be provided to Cities for the purpose of Systems unless they are P25 compliant.

QUESTIONS?

