



# **Erlanger Fire/EMS Department**

## **Public Safety Radio System Subscriber Units**

### **Sealed Bid**



The City of Erlanger Fire/EMS Department hereby accepts bids for **Fire/EMS Public Safety Radio System Subscriber Units** to be provided in accordance with terms, conditions and specifications established herein.

Information received after the date and time set for opening sealed bids will not be considered and will be returned unopened to the Submitter. It is the sole responsibility of the Submitter to assure that his/her information is received by the City of Erlanger before the date and time set for opening the sealed bids.

Information must be sealed in an envelope or box and prominently marked:

#### **Fire/EMS Public Safety Radio System Subscriber Units Bids**

If mailed, the envelope/box must be addressed to:

City of Erlanger  
c/o Sherry Hoffman  
Fire/EMS Public Safety Radio Bids - Sealed  
505 Commonwealth Ave.  
Erlanger, KY 41018

Submission must be submitted no later than November 7, 2018 at 10:15 am Eastern Standard Time.

The City of Erlanger reserves the right to reject any or all submittals, and to waive technicalities and informalities when such waiver is determined by the City of Erlanger and to be in its best interest.

Signature of this document by the Submitter constitutes acceptance by the Submitter of terms, conditions and requirements set forth herein.

Minor exceptions may not eliminate the submittal. Any exceptions to the specifications established herein shall be listed in detail on a separate sheet and attached hereto. The City of Erlanger shall determine whether any exception is minor.

Pricing for the vendors offering shall be recorded on the attached spreadsheet.

Questions should be directed to:  
Deputy Chief Craig Stewart  
[craig.stewart@erlangerfd.com](mailto:craig.stewart@erlangerfd.com)  
859-727-2488

# General Information

Boone, Campbell and Kenton Counties will be deploying a 700/800 MHz P25 Phase 2 simulcast radio communications system provided by Motorola Solutions. This system is currently scheduled to be operational in May 2019. This regional system will provide two-way public safety radio communication to the three counties. The three counties are comprised of 36 cities, 24 police agencies, 32 fire/EMS agencies and 3 emergency management offices.

The quantity of subscriber units that is expected to be purchased for use on this new system is approximately 2100 portable radios, 1200 mobile radios, and 50 control station radios. Each entity will be responsible for procuring radios that will function on the common radio infrastructure. Radios may be procured from multiple vendors. However, the entity noted above is open to proposals that include incentives for purchases of a bulk number of radios from one vendor.

The purchased subscriber units will be shipped to public safety entity in City of Erlanger a few months prior to the completion of the radio system project. Based on the current schedule, it is anticipated that the radio purchases will begin after December of 2018. The warranty for radios procured on this contract will not begin until the new radio system reaches a point of beneficial use. Vendors will be notified by City of Erlanger when this milestone is reached.

The terms of this agreement shall be for one (1) year from the date of acceptance of this contract by the City of Erlanger with an option to renew for (1) additional year.

It is intended that the pricing provided in this Bid may be utilized by government entities throughout City of Erlanger and by specific private sector partners that have a demonstrated need to communicate with public safety personnel within Northern Kentucky. Any purchases by these private sector partners would require approval by public safety personnel in City of Erlanger and by the system administrator. An example of one of these private sector partners would be local hospitals.

No substitutions for articles specified herein may be made without prior approval of the City of Erlanger.

## Subscriber Units

### 1.1.1: Specifications Overview

Public Safety entities throughout Boone, Campbell and Kenton Counties in Northern Kentucky intend to purchase and deploy mobile and portable handheld radios that will be used on a regional Motorola ASTRO P25 Phase 2 trunked simulcast system that is currently being deployed in in the three counties. This new system will use frequencies in the 700/800MHz frequency band. All proposed radios shall be capable of meeting the minimum requirements outlined below:

- Proposed radio shall operate 700/800MHz frequency band.

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

- Proposed radios shall also meet all mandatory requirements for APCO P25 Phase 1 and Phase 2.
- Proposed radios shall have demonstrated that they are functional on APCO P25 Phase 2 trunked simulcast radio system through industry accepted testing procedures.
- Proposed radio equipment shall be FCC type accepted under Part 90 of the FCC Rules and Regulations.

Vendors will propose suitable user equipment for one (1) group of users:

- a. Full featured public safety grade radios as described below that will be the model used by firefighters and other emergency responders in the new Northern Kentucky radio system.
- b. High end user radios, for Commander/Management level: Vendors will describe and provide their top performance models meeting all requirements as defined for public safety grade units with all additionally available features including multi-band operation.

Public Safety grade radio shall have the following minimum features and functions:

- a. Rotary on/off/volume control knob (handheld radios)
- b. 16 position rotary knob with stops (handheld radios)
- c. Alphanumeric display with a minimum of eight (8) characters
- d. Back lighting of display with dimmer control
- e. Minimum 32 conventional channels
- f. Minimum 256 system/talkgroups
- g. AMBE+2 Vocoder
- h. APCO P25 Digital and conventional analog talk-around operation
- i. Mixed Mode Operation (Trunked talkgroups and Conventional Channels in the same bank of frequencies)
- j. Emergency operation with activation button on the top of the radio
- k. Group scan
- l. APCO P25 compliant DES/AES Encryption
- m. Individual call
- n. PC programmable
- o. Programmable time-out timer
- p. Mil Specs 810C, D, E, F, and G
- q. IP67 or better – Dust and immersion in water minimum for public safety radios
- r. Dynamic regrouping capable
- s. 7-year factory warranty

Additionally, public safety grade radios will have the following:

- a. Available Options:
  - i. A top mounted alphanumeric display for viewing channel/talk group
  - ii. Minimum three position programmable selector switch on the top of the radio
  - iii. Bluetooth interface
  - iv. GPS

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

- b. Available accessories
  - i. Rapid rate desk charger (1 hour full recharge)
  - ii. Spring-loaded belt clip
  - iii. Choice of battery types (12 hours minimum)
  - iv. Multi-unit charger (standard charge)
  - v. Public Safety remote speaker-mic with emergency activation button
  - vi. Public Safety grade throat mic with adaptor and PTT switch
  - vii. Covert surveillance earpiece to work with lapel mic
  - viii. Noise cancelling mic with emergency activation button (no antenna and antenna)
  - ix. Complete programming set – software, licenses, cables and connectors
  - x. Complete encryption management kit – software, licenses, cables and connectors

Radio without numeric keypads are preferred.

### 1.1.2 Portable Radio - 700/800 MHz

The portable radio will be used by public safety personnel in harsh environments. The portable radio shall meet MIL 810 C, D, E, F and G standards for shock, vibration, salt, fog, and rain, and IP67 minimum for dust and immersion in water for public safety models. Radios shall consist of an FM transmitter/receiver, battery power supply and operating controls; all housed in a durable, and attractive weather resistant enclosure. The case of the unit shall fit comfortably in, and permit, one hand operation.

Portable radios supplied shall be frequency synthesized and furnished to operate on all channels in the 700/800 MHz land mobile radio bands used by public safety. Radios shall be operational in the following modes: conventional analog with CTCSS, conventional APCO P25 digital and APCO P25 Phase 2 (TDMA) trunking. When operating in trunking mode, the portable radio shall provide visual and audible indications to the end user when the conditions of site trunking and fail-soft.

Portable radios shall have a unique multi-digit serial number applied to each unit. These numbers shall be engraved, stamped, or printed on a damage resistant bar coded label. They shall be of such type, and located in such a position that their removal or alteration is as difficult to do and as obvious to notice as economically feasible. There is also interest in having the agencies name and telephone number engraved on the radio housing in a conspicuous area. Vendors should provide pricing for this engraving if this option is available.

The radio set shall be small, lightweight and rugged. The radio set shall be capable of withstanding severe operating conditions. The portable housing shall be constructed of high impact resistant material. It shall be sealed and gasketed to protect internally mounted circuitry against dust, foreign particles, moisture and splashing water. Opening the battery compartment shall not break the seal to the radio circuitry. "Ruggedized" portable radios are preferred for public safety operations.

The radio shall be single battery operated to insure uniform battery depletion. Submitters shall propose a rechargeable battery, which shall be quickly and easily removed. Batteries must be capable of full recharge in one (1) hour or less. Batteries

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

provided must be capable of withstanding a 3' drop test to concrete without damaging battery performance or visibly cracking the battery housing. Standard batteries offered with the proposed radios shall allow the radio to operate for a minimum of 12 hours under normal conditions.

The volume and mode selection controls on the portable radios shall be mounted on the top of the unit for easy access. Minimum volume shall be software programmable. Radios shall have a rotary control knob to select talk groups as desired, simultaneously selecting the correct transmitter and receiver digital code. The switch shall not rotate through more than 355 degrees. Other controls shall include a volume control/on-off switch. A sealed transmitter "push-to-talk" (PTT) switch shall be provided on the side of the unit, and an emergency switch shall be provided for user defined quantities of radios.

All portables shall be available with a variety of devices such as belt clips, leather cases, etc. Removal of the public safety speaker/microphone must be possible radio without the use of tools, and then operate the radio in normal fashion. Public safety speaker/microphones should have antennas as an option for the microphone. These speaker/microphones shall connect the speaker microphone to the radio, and have an emergency alarm switch/button that can activate the emergency alarm in the portable radio. Speaker microphones shall be noise canceling.

Additional equipment specifications are listed below.

**Unit Identification** - Shall transmit a digital unit identification when the PTT switch is depressed. This unit identification shall be PC programmable and capable of being unique for each specific operational mode and/or trunked system.

**System Compatibility** - Radios shall be equipped and compatible with the following trunked system software or firmware related functions:

- Dynamic talkgroup reconfiguration
- System access priority
- Trunking controller failure operating mode
- Wide area operation capability
- Selective inhibit and uninhibit
- Multi-key Encryption (DES/AES Encryption)
- Software driven tuning and alignment capabilities
- Radio programming via Kiosk, Wi-Fi, or batch cloning (optional)

**Emergency Alarm Switch-** An emergency button/switch shall be provided, which, when activated, permits immediate transmission of the emergency alarm to alert the dispatcher of an emergency transmission in all modes of operation listed above. When the emergency button is activated, the transmitter operates in its highest priority mode, and the PTT switch can be used to key the transmitter in that mode. Submitter shall describe programmable options associated with emergency signaling that are available with their submission.

**Status Tones** - Shall provide audible programmable indication of the following conditions:

- Low battery

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

- System busy
- Call back when channel available
- Trunking controller failure
- Time out timer activation
- Access to system denied
- Out of trunked radio system range
- Master Network Controller failure
- Other reduced capability indicator

The audio output levels of status tones shall be capable of being programmed to levels that are independent of the volume control.

**Selector Switches/Buttons** - Rotary selectors are required for public safety models. Radios should have minimal buttons on the faceplate of the radio. Radios without DTMF key pads are preferred.

**Talk-around and Conventional Operation** - Shall provide for direct, simplex, and radio-to-radio communication in analog or APCO P25 digital mode. Programming should allow user selection of a trunked talkgroup, a conventional channel or a talk-around channel from the same bank utilizing the top selector control. This operational method shall not result in loss of radio features or the functional system/group (channel) capacity.

- **Battery Chargers** - Two types of battery chargers shall be provided. Desktop chargers shall hold a single radio unit or battery operating from 110V AC, 60 Hz primary power. Vehicular chargers shall hold a single radio unit or battery operating from 12V DC primary power. All chargers shall automatically switch to trickle charge when the battery is 70% (or more) charged. Miniature meters (scaleless) or lighted indicators shall be provided which will indicate when a battery is charging and also when it is fully charged.

Each charger provided should be capable of recharging batteries while either connected to, or removed from the radio set.

### 1.1.3 Mobile Radio, 700/800 MHz

Mobile radios shall be frequency synthesized and furnished to operate on all channels in the 700/800 MHz land mobile radio bands. Specific channel assignment will be made by the trunking control system. In the event the mobile radio unit begins operating on a site or subsystem which is in a failed mode, the radio shall be capable of generating a unique tone that will be heard on the unit's speaker and indicate the failure mode on the display if applicable. Submitters shall describe the capabilities of the proposed mobile radios to provide an indication to the user that the trunked system is operating in a mode that is not normal. It is preferred that users have the ability to silence the failure indication tone.

Detailed operational and technical instructions on programming shall be supplied. The RF output power into 50 Ohms shall be 15 Watts minimum.

Mobile shall have a unique multi-digit serial number applied to each unit. These numbers shall be engraved, stamped, or printed on a damage resistant bar coded

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

label.. These shall be of such type, and located in such a position that their removal or alteration is as difficult to do and as obvious to notice as economically feasible.

The mobile station exterior housing shall be made of plated or painted steel or aluminum of sufficient gauge to provide for adequate protection and theft deterrence. Plastic, nylon or other suitable synthetic material may be used for the radio enclosure/housing if its usage is adequately justified and it can meet the required performance specifications.

The interconnecting cable, including + and - DC power, shall be of such construction that frequent exposure to hydraulic fluids and petroleum based oils will cause minimal damage, such as cracking or softening of the cable jacket.

All mobile units and operation radios shall be supplied with control unit, speaker, microphone and all accessories required for installation.

The microprocessor-based radio equipment shall be completely functional in the vehicular environment in which City of Erlanger and City of Independence intends it to be used and not cause interference with normal vehicle operations. This test shall include, but not be limited to, RF immunity, DC input voltage fluctuations, noise introduced in the DC line and typical usage impact.

Open air mobile units and all external headsets, microphones and speakers must be weatherproofed and suitable for outdoor mounting. All installation and operating cabling, brackets, etc. must be part of this procurement.

The housing shall be devoid of any louvers or other openings thereby protecting the radio set from dirt, dust, and moisture and splashing water.

The mobile radio shall be capable of operation from a nominal 12-volt dc primary power source, with positive action reverse polarity protection to avoid damage if the radio were to be incorrectly installed. In that event, the only damage allowed shall be blown fuses if the radio were turned "ON". The radio set shall operate from a negative ground primary source.

All power should be derived directly from the vehicle battery, without using active components such as transistors in an oscillator circuit, step-up transformers, or rectifiers. Primary power input shall be adequately fused to assure fast and positive action.

Some mobile radios will require priority-scanning capability. These units shall be capable of scanning a minimum of ten (10) fleets/sub fleets. The operator shall be readily able to select the fleets/sub fleets to be scanned, to designate and change the priority channel, and to enable or disable the scanning mode.

Additional equipment specifications are listed below.

System Compatibility - Mobile radios shall be equipped and compatible with software related features of the trunking system:

- Dynamic talkgroup reconfiguration
- System access priority
- Trunking controller failure operating mode

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

- Wide area operation capability
- Selective inhibit and uninhibit
- Multi-key Encryption (AES Encryption)
- Software driven tuning and alignment capabilities
- Radio programming via Kiosk, Wi-Fi, or batch cloning (optional)

**Emergency Alarm Switch** - Mobile radio control heads shall be equipped with an emergency switch which will encode a unit identification and emergency status message when depressed. The emergency signaling shall be placed onto the system immediately to be decoded and displayed at the user's dispatch center. Submitter shall describe programmable options associated with emergency signaling that are available with their submission.

**Status Tones** - Audible programmable indication shall be provided for the following operational conditions:

- System busy
- Callback when channel is available
- Trunking controller failure
- Time out timer operation
- Access to system denied
- Out of range of trunked system

### Control Head

- Mounting - Shall provide for mounting on vertical or horizontal plane mounting surface
- Displays - Shall be clearly labeled and shall be backlit for nighttime visibility
- Microphone - Palm type, with push to talk switch
- Selector Switches/Buttons - Rotary selectors and volume controls are preferred on Public Safety radios but not required. Units should have minimal buttons on the faceplate and ones without DTMF key pads are preferred.
- Multiple control heads - Some vehicles require a front and rear control heads
- An "on-off" switch shall control primary power to the radio set.
- A volume control shall regulate the audio level of the speaker. Minimum volume shall be software programmable.
- Indicator lamps (either LED or LCD devices) shall be provided which indicate "radio set on" and "transmitter carrier on" functions.
- A talkgroup selector switch or switches, if applicable.
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**Service Facilities** - A central metering jack shall be provided for connecting test apparatus to the radio for measuring transmitter and receiver circuitry alignment.

**Selective Signaling and Alert Decoder** – Unit shall allow for selective signaling of mobile units and shall provide a visual or audible indication on the control head of a call waiting.

**Talk-around and Conventional Operation** - Shall provide for direct, simplex, mobile-to-mobile communication in analog or digital mode. Programming should allow



## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

user selection of a trunked talkgroup, a conventional channel or a talk-around channel from the same bank utilizing the talk group/channel selector control. This operational method shall not result in loss of radio features or the functional system/group (channel) capacity.

**Interfaces** – Units shall have connections readily available that will allow the mobile radio to be interfaced with intercom systems manufactured by third parties (e.g.: Sigtronics headsets)

### 1.1.4 Control Stations

Control station radios shall be frequency synthesized and furnished to operate on all channels in the 700/800 MHz land mobile radio bands. Specific channel assignment will be made by the trunking control system. In the event the control station radio unit begins operating on a site or subsystem which is in a failed mode, the radio shall be capable of generating a unique tone will be heard on the unit's speaker and indicate the failure mode on the display if applicable. Submitters shall describe the capabilities of the proposed control station radios to provide an indication to the user that the trunked system is operating in a mode that is not normal. It is preferred that users have the ability to silence the failure indication tone.

Detailed operational and technical instructions on programming shall be supplied. The RF output power into 50 Ohms shall be 15 Watts minimum.

Control station radios shall have a unique multi-digit serial number applied to each unit. These numbers shall be engraved, stamped, or printed on a damage resistant bar coded label. These shall be of such type, and located in such a position that their removal or alteration is as difficult to do and as obvious to notice as economically feasible.

**Automatic Unit Identification** - Shall transmit digital unit identification on push to talk.

**System Compatibility** - Control Stations shall be equipped and compatible with software related features of the trunking system:

- Dynamic talkgroup reconfiguration
- System access priority
- Trunking controller failure operating mode
- Wide area operation capability
- Selective inhibit and uninhibit
- Multi-key Encryption (AES Encryption)
- Software driven tuning and alignment capabilities
- Radio programming via Kiosk, Wi-Fi, or batch cloning (optional)

**Emergency Alarm Switch** - As outlined in the pricing section, control stations shall be equipped with an emergency switch which will encode a unit identification and emergency status message when depressed. This indication shall be placed onto the system immediately, and shall be decoded and displayed at the user's dispatch center. Submitter shall describe programmable options associated with emergency signaling that are available with their submission.

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

**Status Tones** - Audible indication shall be provided for the following operational conditions:

- System busy
  - Callback when channel is available
  - Trunking controller failure
  - Time out timer operation
  - Access to system denied
  - Out of range of trunked system
- **Controls**
- Displays - Shall be clearly labeled and shall be backlit for nighttime visibility
  - Microphone – Desk or palm type, with push to talk switch
  - Selector Switches - Rotary selectors and volume controls are required on Public Safety radios, instead of rocker buttons
  - An "on-off" switch shall control primary power to the radio set.
  - A volume control shall regulate the audio level of the speaker. Minimum volume shall be software programmable.
  - Indicator lamps (either LED or LCD devices) shall be provided which indicate "radio set on" and "transmitter carrier on" functions.
  - A talkgroup selector switch or switches, if applicable.

**Service Facilities** - A central metering jack shall be provided for connecting test apparatus to the radio for measuring transmitter and receiver circuitry alignment.

### **Selective Signaling and Alert Decoder**

- Shall allow for selective signaling of radio units
- Shall provide a visual or audible indication on the control head of a call waiting

**Talk-around and Conventional Operation** - Shall provide for direct, simplex, radio-to-radio communication on the base station transmit frequency or other frequency, and conventional mobile relay operation

### **1.1.5 Additional Items**

**Bluetooth Microphones** – Any Bluetooth speaker/microphones that are proposed shall be designed for use with the radios offered. Bluetooth speaker/microphones for portable radios shall have features and control switches similar to those on the speaker/microphone provided.

**Installation Services** – Vendors should provide pricing for installation of a single mobile radio in the following vehicle types in both front mount and remote mounting configurations.

- Fire Engine (front mount)
- Ambulance (dual control mount)
- Command SUV (dual control mount)
- Utility Pickup (front mount)

## City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets

**Programming Software and Cables; Radio Fleet Management** – Vendor shall provide pricing for a software package to allow programming of the radios specified including programming cables. The software shall allow programming of both conventional analog, P25 digital, and P25 trunking modes. Pricing for advanced security keys to allow programming of trunked radios systems shall be provided.

Pricing for any radio fleet/radio programming management software offered by the vendor shall be provided. This software should allow programming of radios at locations or kiosks distributed throughout Northern Kentucky. Vendors should detail any equipment that is needed at the kiosk locations to allow programming and how the radios are connected (programming cable, Wi-Fi, Bluetooth). Vendors are not responsible for the network connectivity between these sites. Vendors shall provide the minimum network requirements to establish connectivity between these locations to ensure operation of their software.

### **1.1.5 Offering**

Submitters shall complete an information sheets below for each of the radio models offered in each category. Submitters shall indicate whether the listed features are included in the price. Please note that there are minimum radio requirements radio type. Each offering shall have a picture depicting the model of radio being supplied. It is envisioned that various entities will partner together to achieve bulk quantity discounts. As such, any one time discounts for bulk radio purchases will be divided equally among the quantity of radios purchased in order to achieve a per unit cost.

Vendors shall also provide a current product catalog that provides a listing of radio equipment and accessories and the item's associated list price.

**City of Erlanger Fire/EMS Department Radio Purchase Pricing Sheets**

<b><u>ITEM</u></b>	<b><u>COST</u></b>
Portable Radio (include model)	
Fire Service Mic (include model)	
3400 mAh Spare Battery (intrinsically safe) or equivalent	
Engraving - Portable Radios	
Leather Radio Holster for Shoulder Straps	
Dual Head capable Mobile Radio (include model)	
Dual Control Head Option (include model)	
Single Head Mobile Radio (include model)	
Long Range Wireless Mobile Mic	
Low Profile Antenna Kits	
Installation - Ambulance - Front	
Installation - Ambulance - Rear	
Installation - Engine	
Installation - Rescue	
Installation - Command Vehicle	
Installation - Pick Up Truck	
Initial Programming	
Secondary Programming	
Vehicle Charger	
Desk Charger	
Six-Bank Charging Unit	
Programming Software	
Portable Programming Cable	
Mobile Programming Cable	
(Trade In - Portables)	
(Trade In - Mobiles)	