



CITY COUNCIL AGENDA REPORT

MEETING DATE: MARCH 7, 2006

ITEM NUMBER:

SUBJECT: AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COSTA MESA, CALIFORNIA CREATING CHAPTER IX OF TITLE 5 OF THE CITY OF COSTA MESA MUNICIPAL CODE REGARDING IN-BUILDING PUBLIC SAFETY RADIO SYSTEM COVERAGE

DATE: FEBRUARY 13, 2006

FROM: DEVELOPMENT SERVICES DEPARTMENT/BUILDING SAFETY DIVISION

PRESENTATION BY: KHANH NGUYEN, CBO, BUILDING OFFICIAL

FOR FURTHER INFORMATION CONTACT: KHANH NGUYEN (714) 754-5277

RECOMMENDATION:

Give first reading to the attached ordinance creating municipal code Title 5, Chapter IX, sections 5-130 through 5-137 regarding in-building public safety radio system coverage.

BACKGROUND:

In the City of Costa Mesa there has been an increase in the number of large commercial, industrial, and residential buildings that are constructed of metal and concrete. These buildings have significantly reduced the capability of the City's Fire and Police Departments to effectively communicate with their field personnel on the radio system since the County of Orange converted its public safety radio systems to the 800 MHz Countywide Coordinated Communications System. This hazard is exacerbated in subterranean or dense structures. The proposed new Municipal Code sections will require builders, owners, and developers of new dense buildings and subterranean structures to submit to field radio testing and to install in-building coverage systems in areas of buildings that do not permit effective public safety radio communications.

ANALYSIS:

As the pace of high-density development increases throughout the City, fire and police personnel continue to experience a reduction in the effectiveness of radio communications in these structures on the 800 MHz Countywide Coordinated Communications System. A 2000-2001 Orange County Grand Jury and the Orange County Sheriff's communication engineers studied this issue and recommended the installation of in-building coverage systems to augment firefighters' and police officers' portable radios while operating in buildings that, due to their construction, impede and/or impair effective radio communication. Additionally, the City is presently considering several developments that include multiple residential towers, large mixed-use projects, and buildings with substantial subterranean parking. The necessary components of building design for these structures cause them to be more dense

and/or have reflective surfaces that prohibit radio signals from penetrating or passing through.

Due to this continued erosion of effective communications in public safety, a regulatory scheme is necessary to ensure that safe and effective public safety communications exists as the City continues to develop and progress. The proposed ordinance will accomplish this goal by requiring the integration of a bi-directional amplifier system or alternate in-building coverage system in new buildings over three stories in height and/or subterranean structures. The intent is to ensure effective communications for emergency services personnel. As a result, the occupants of these buildings will enjoy much greater safety and security in knowing that fire and police services will be able to communicate effectively in the event of an emergency. In fact, in-building coverage systems, which have proven to be extremely effective, have been installed in 35 different buildings in Orange County, including major locations such as the Buena Park Mall, South Coast Plaza, Saddleback Hospital, and John Wayne Airport.

ALTERNATIVES CONSIDERED:

1. Give first reading to the attached ordinance; or
2. Modify any portion of the attached ordinance; or
3. Not take any action.

FISCAL REVIEW:

There will be no direct costs to the City of Costa Mesa.

LEGAL REVIEW:

The City Attorney's Office has reviewed the ordinance and approved it as to form.

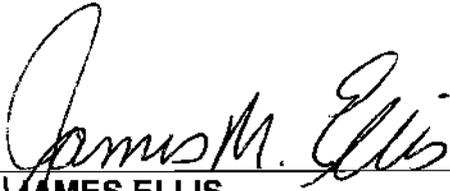
CONCLUSION:

The draft ordinance will require owners, builders, and/or developers of affected buildings and structures to meet the specifications as indicated in the proposed City of Costa Mesa In-Building Public Safety Radio System Coverage Specifications (Attachment "A") as a condition for receiving or maintaining certificates of occupancy. The County Sheriff-Coroner Department/Communications Division will determine whether a building or structure design complies with these specifications. As proposed by this ordinance, fire officials will conduct annual radio reception inspections to ensure continued compliance as part of their annual fire inspections program.

As coverage requirements and technology may change in the future, the City retains the right to amend this ordinance to assure adequate public safety in-building coverage within its jurisdiction. The Cities of Irvine, Aliso Viejo, Lake Forest, and San Clemente have passed similar ordinances in 2005.


KHANH NGUYEN, CEO
Building Official


DONALD D. LAMM, AICP
Deputy City Mgr., Dev. Svs. Director



JAMES ELLIS
Fire Chief



JOHN HENSLEY
Chief of Police



STEVE MANDOKI
Administrative Svs. Director

DISTRIBUTION: City Manager
City Attorney
Orange County Sheriff Dept./
Communications Director
City Clerk (2)
Staff (4)
File (2)

ATTACHMENTS: 1 ORDINANCE

File Name: 0030706PublicSafetyRadioOrd Date: 021306

Time: 12:30 p.m.

ORDINANCE NO. 06-__

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COSTA MESA, CALIFORNIA, CREATING CHAPTER IX OF TITLE 5 OF THE CITY OF COSTA MESA MUNICIPAL CODE, REGARDING IN-BUILDING PUBLIC SAFETY RADIO SYSTEM COVERAGE.

WHEREAS, the City of Costa Mesa ("City") provides public safety services to its community including fire services through the Costa Mesa Fire Department ("CMFD") and police services through the Costa Mesa Police Department ("CMPD").

WHEREAS, recent development through the City has caused interference to the 800 MHz Countywide Coordinated Communication System used by both CMPD and CMFD; and

WHEREAS, said radio interference has caused a lack of both quality and essential public safety emergency radio communication, and as a result, is a potential threat to the safety of emergency workers and to the public; and

WHEREAS, this ordinance may be adopted pursuant to Government Code Section 36737(a) in that it is adopted for the preservation of the public peace, health or safety. The facts justifying the adoption of the ordinance are that in the absence of this ordinance, public safety radio communications would be compromised. As the city enjoys rapid growth, many new buildings are being constructed within the city and some of these buildings have been, and will in the future be, constructed out of substances (e.g., metal and concrete), which impede and/or impair radio communications used by the CMFD and CMPD. The City's fire and police personnel have been finding it increasingly difficult to effectively communicate with each other and CMFD and CMPD's communications centers during critical situations while in dense or subterranean residential and commercial structures. As a result, both the public at large and emergency personnel may face an increased risk of harm; and

WHEREAS, in order to minimize the danger to life caused by ineffective communication, all planned construction of new buildings that do not allow for the necessary level of communication under the 800 MHz Countywide Coordinated Communications System must be equipped with technology that will allow effective and continuous radio communication to be maintained; and

WHEREAS, the proposed ordinance constitutes a "local security standard" regulating the erection, construction, or alteration of buildings within the City;

THEREFORE, THE CITY COUNCIL OF THE CITY OF COSTA MESA DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Title 5 of the Costa Mesa Municipal Code entitled "Building and Structures," is hereby amended to add Chapter IX, entitled "IN-BUILDING PUBLIC SAFETY RADIO SYSTEM COVERAGE" commencing with Section 5-130 and concluding with Section 5-137 is hereby added to read in its entirety as follows:

Sec. 5-130. Intent and purpose.

The intent of the chapter is to provide a regulatory framework for the purpose of providing effective 800 MHz Countywide Coordinated Communication System coverage throughout the City of Costa Mesa for police and fire emergency services.

Sec. 5-131. Definitions.

The following words, terms, and phrases when used in this chapter shall have the meanings ascribed to them in this section, except where the context clearly indicates a differing meaning:

OCSD/Communications: Orange county Sheriff-Coroner Department/Communications Division.

Countywide Coordinated Communication System: That radio system used by all local law enforcement and fire departments within the County of Orange for emergency and non-emergency radio communication on the 800 MHz radio band.

City of Costa Mesa In-Building Public Safety Radio System Coverage Specifications: Those specifications designed to provide optimum coverage and radio effectiveness within buildings and structures under the countywide Coordinated Communication System.

Sec. 5-132. Use and occupancy.

Except as otherwise provided, no person shall own, erect, construct or occupy, any building or structure, or any part thereof, or cause the same to be done, which fails to support adequate radio coverage for City emergency service workers operating on the 800 MHz Countywide Coordinated Communication System. Further, owners must maintain a reasonable standard of reliable radio communication within their buildings and structures once a Certificate of Occupancy is issued. For the purposes of this section, adequate radio coverage shall include those specifications in the City of Costa Mesa In-Building Public Safety Radio System Coverage Specifications, attached and incorporated herein as Attachment "A".

Sec. 5-133. Testing procedures.

Test of radio coverage will be conducted pursuant to those specifications in the City of Costa Mesa In-Building Public Safety Radio System Coverage Specifications, attached and incorporated herein as Attachment "A", as summarized below.

- A. Initial Tests. Initial Tests will be performed by FCC-certified technicians, authorized by the county Sheriff-Coroner Department/Communications Division, or by such agency in accordance with Test Standards as listed in the City of Costa Mesa In-Building Public Safety Radio System Coverage Specifications, attached and incorporated herein as Attachment "A". A Certificate of Occupancy shall not be issued to any structure if said structure, or any part thereof, fails to comply with these Test Standards.
- B. Annual Tests. Annual tests will be conducted by CMFD, the local fire department personnel, or their agent in accordance with the Test Standards as

listed in the City of Costa Mesa In-Building Public Safety Radio System Coverage Specifications, attached and incorporated herein as Attachment "A".

Sec. 5-134. Amplification systems allowed.

Buildings and structures that cannot support the required level of radio coverage shall be equipped with amplifications systems as specified in the City of Costa Mesa In-Building Safety Radio System Coverage Specifications, attached and incorporated herein as Attachment "A" or any other system approved by the OCSD/Communications, in writing.

Sec. 5-135. Exemptions.

This ordinance shall not apply to the following:

- (1) Existing buildings or structures at the time this ordinance is adopted;
- (2) Those approved by building permit prior to the adoption of this ordinance (this would include buildings under construction);
- (3) Elevators; and
- (4) New and planned construction that is three (3) stories or less without subterranean storage or parking.

Should new construction that is three (3) stories or less include subterranean storage or parking, then this ordinance shall apply only to the subterranean areas.

Sec. 5-136. Costs.

The FCC-certified and OCSD/Communications approved technician required by section 5-133 to conduct Initial Tests shall be employed by the owner, the engineer or architect of record, or agent of the owner, but not by the contractor or any other person responsible for the work.

Sec. 5-137. Non-compliance.

After discovery of non-compliance following issuance of Certificate of Occupancy, the building owner is provided six (6) months to remedy the deficiency and gain compliance.

Section 2. Environmental Determination. The adoption of this Ordinance is exempt from the requirements of the California Environmental Quality Act pursuant to Section 15308 of Title 14 of the California Code of Regulations because the Ordinance sets forth specifications and procedures for the maintenance, restoration, enhancement, and protection of the environment.

Section 3. Inconsistencies. Any provision of the Costa Mesa Municipal Code or appendices thereto inconsistent with the provisions of this Ordinance, to the extent of such inconsistencies and no further, is hereby repealed or modified to the extent necessary to affect the provisions of this Ordinance.

Section 4. Severability. If any chapter, article, section, subsection, subdivision, sentence, clause, phrase, or portion of this Ordinance, or the application thereof to any person, is for any reason held to be invalid or unconstitutional by the decision of any court of competent

jurisdiction, such decision shall not affect the validity of the remaining portion of this Ordinance or its application to other persons. The City Council hereby declares that it would have adopted this Ordinance and each chapter, article, section, subsection, subdivision, sentence, clause, phrase or portion thereof, irrespective of the fact that any one or more subsections, subdivisions, sentences, clauses, phrases, or portions of the application thereof to any person, be declared invalid or unconstitutional. No portion of this Ordinance shall supersede any local, State, or Federal law, regulation, or codes dealing with life safety factors.

Section 5. This Ordinance shall take effect and be in full force thirty (30) days from and after the passage thereof and prior to the expiration of fifteen (15) days from its passage shall be published once in the ORANGE COAST DAILY PILOT, a newspaper of general circulation, printed and published in the City of Costa Mesa or, in the alternative, the City Clerk may cause to be published a summary of this Ordinance and a certified copy of the text of this Ordinance shall be posted in the office of the City Clerk five (5) days prior to the date of adoption of this Ordinance, and within fifteen (15) days after adoption, the City Clerk shall cause to be published the aforementioned summary and shall post in the office of the City Clerk a certified copy of this Ordinance together with the names and member of the City Council voting for and against the same.

PASSED AND ADOPTED this ____ day of _____, 2006

Mayor

ATTEST:

APPROVED AS TO FORM:

City Clerk of the
City of Costa Mesa

City Attorney

STATE OF CALIFORNIA)
COUNTY OF ORANGE) ss
CITY OF COSTA MESA)

I, Julie Folcik, City Clerk and ex-officio clerk of the City Council of the City of Costa Mesa, hereby certify that the above and foregoing Ordinance No. 06-__ was introduced and considered section by section at a regular meeting of said City Council held on the ____ day of _____, 2006, and thereafter passed and adopted as a whole at a regular meeting of said City Council held on the ____ day of _____, 2006, by the following roll call vote:

AYES:

NOES:

ABSENT:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Seal of the City of Costa Mesa this ____ day of _____, 2006.

City Clerk and ex-officio
Clerk of the City Council of the
City of Costa Mesa

ATTACHMENT "A"

CITY OF COSTA MESA IN-BUILDING PUBLIC SAFETY RADIO SYSTEM COVERAGE SPECIFICATIONS

1. Performance.

Specifications are provided to assist property owners in satisfying a delivered audio quality (DAQ) of 3 with a 90% reliability factor for emergency personnel using radio communication in their buildings and structures. Property owners who can demonstrate full compliance with the reliability factor without adhering to all of the following specifications may be excused from all or part of these provisions. Property owners who adhere to all of the specifications and fail to reach the reliability factor must employ all resources necessary to ensure full compliance. Performance and compliance will be inspected annually as part of the CMFD's Fire Inspection.

2. Signal Strength, Signal Rejection, Modulation Compatibility, and Delivered Audio Quality and Technical Specifications.

The following defines the minimum required level of radio signal strength, provided the signal strength delivered by the Countywide Communications System external to the building is at least -65dBm:

- A minimum signal strength of (-95dBm) in 90% of the area of each floor of the building from both the 800 MHz Countywide Communications System and from within the building is required.
- The frequency range supported *from* the 800 MHz Countywide communications System shall be 851 – 869 MHz (base transmitter frequencies).
- The frequency range supported *to* the 800 MHz Countywide Communications System shall be 806 – 824 MHz (radio field transmit frequencies).
- A public safety radio amplification system shall include filters to reject frequencies below 851 MHz and frequencies above 869 MHz by a minimum of 35 dB.
- All system components must be 100% compatible with analog and digital modulations after installation without additional adjustments or modifications. The systems must be capable of encompassing the frequencies stated herein and capable of future modifications to a frequency range subsequently established by the City of Costa Mesa. If the system is not capable of modification to future frequencies, then a new system will need to be installed to accommodate the new frequency band.
- Active devices shall have a minimum of -50dB 3rd order intermodulation protection.
- All active in-building coverage devices shall be FCC Part 90 Type Certified.

- UL listing is required for any AC operated power supplies.
- Active devices shall include a minimum of 12 hours of battery backup power.
- Any in-building coverage system shall be installed by a City approved, manufacturer-trained and certified installer.

The delivered audio quality is defined below:

DAQ Delivered Audio Quality	Subjective Performance Description
1	Unusable, speech present but unreadable.
2	Understandable with considerable effort. Frequent repetition due to noise/distortion.
3	Speech understandable with slight effort. Occasional repetition required due to noise/distortion.
3.5	Speech understandable with repetition only rarely required. Some noise/distortion.
4	Speech easily understood. Occasional noise/distortion.
4.5	Speech easily understood. Infrequent noise/distortion.
5	Speech easily understood.

3. Remedies to achieve compliance (Acceptable Amplification Systems):

If needed to ensure compliance with the 90% reliability factor, the property owner must install each of the following:

- An in-building coverage system composed of a radiating cable system or an internal multiple antenna system with FCC-certified bi-directional 800 MHz amplifier(s), distribution system, and subcomponents.
- Any active devices (e.g. signal booster(s)) must be encased in a NEMA 4 (or equivalent) dust/waterproof case and clearly labeled "City of Costa Mesa Public Safety Radio".
- Multi-band pass filters as required.

In the event of a power outage, all electrical components must be equipped with independent auxiliary battery power or generators to function at full capacity for at least twelve (12) hours.

Once a system is installed, a Spectrum Analyzer will be used to evaluate the system for harmful interference to the 800 MHz Countywide Coordinated Communications system backbone initially, and annually thereafter by a OCSD/Communications approved FCC-

certified technician. Any interference must be identified and removed before the system can be accepted.

4. Applicable Federal Communications Commission rule Compliance.

All active devices used to provide extended coverage must be FCC-certificated.

5. Test Standards.

A. Design Review and Certification.

1. To obtain a building permit, the applicant shall do the following:

i. Retain an FCC-certified and OCSD/Communications approved technician who will review construction plans in order to ensure that such plans meet aforementioned radio communication criteria, and recommend, if needed, an in-building solution for reliable radio communication:

ii. Submit copies of plans certified with the signature of the technician to the Building Official of the City of Costa Mesa, CMFD, and OCSD/Communications within a timely manner:

2. To obtain a Certificate of Occupancy, the applicant shall do the following once the building or structure is constructed:

i. Retain an FCC-certified and OCSD/Communications approved technician who will test external signal strength to verify the minimum external level of Paragraph 2 above, and who will test all areas of the building or structure and certify all of the findings stated herein on the date of inspection with his/her signature. A passing test is one that demonstrates DAQ 3 with a 95% reliability factor on each floor. Owners of buildings or structures that fail to meet this standard will not be in compliance with this ordinance.

ii. The building owner must retain all records of initial and annual inspections and submit copies to the Building Official of the City of Costa Mesa, CMFD, and OCSD/Communications within a timely manner.

B. Initial Test Procedure. For purposes of testing, each floor of the building shall be divided into a grid of approximately twenty (20) equal areas. A maximum of two (2) nonadjacent areas will be permitted to fail the test. In the event that three (3) of the areas fail the test, and to provide greater statistical accuracy, the floor may be divided into forty (40) equal areas. In such an event, a maximum of four (4) nonadjacent areas will be permitted to fail the test. As specified by the authority having jurisdiction, the test shall be conducted by using a Motorola XTS

3000/XTS 5000 or equivalent portable radio talking through the 800 MHz Countywide Coordinated Communications System. A spot located approximately in the center of a grid area will be selected for the test. The radio will then be keyed to verify two-way communication to and from the outside of the building through the 800 MHz Countywide Communications System. Once the spot has been selected, prospecting for a better spot within the grid area will not be permitted.

All auxiliary power systems shall be tested under load for a period of one (1) hour to verify that the system will operate properly in the event of a power outage. The testing technician reserves the discretion to determine whether or not the battery exhibits symptoms of failure. The FCC-certified technician will ultimately decide if the auxiliary system needs to be replaced or upgraded.

C. Annual Test Procedure. After a Certificate of Occupancy is issued, the CMFD Inspector or appointed agent will annually test the in-building system components to determine general functional operability. If non-compliance is found, an approved FCC-certified technician will reassess the external signal level to verify consistency with prior measurements and will reassess the improvement upon scheduling by the building owner.

D. Every two years battery back-up systems shall be replaced per manufacturer's specifications.

6. Additional equipment feature requirements.

Active devices shall be alarmed. A phone line (plain old telephone service or POTS) will provide dial tone to an alarm device. The alarm device will be programmed to activate a pager on the county of Orange's 900 MHz paging system. Access to the active components of the in-building coverage system (if any) is required twenty-four (24) hours a day by County technicians/engineers.

7. New Building Construction.

All new building construction shall have a minimum four-inch conduit installed between the first and bottom subterranean floor and said conduit shall extend along the center of the building to the roof. At each floor and the roof, an opening shall be made to afford easy access to the conduit from the ceiling. Access in either the form of drop ceiling or conduit shall be made available along hallways and through firewalls. All subterranean parking garages shall have a similar conduit installation.