

# **INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS**

## **DIVISION OF OCCUPATIONAL HEALTH, SAFETY AND MEDICINE**

### **Position on the Health Effects from Radio Frequency/Microwave (RF/MW) Radiation in Fire Department Facilities from Base Stations for Antennas and Towers for the Conduction of Cell Phone Transmissions**

The International Association of Fire Fighters' position on locating cell towers commercial wireless infrastructure on fire department facilities, as adopted by its membership in August 2004 <sup>(1)</sup>, is that the IAFF oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions until a study with the highest scientific merit and integrity on health effects of exposure to low-intensity RF/MW radiation is conducted and it is proven that such sitings are not hazardous to the health of our members.

Further, the IAFF is investigating funding for a U.S. and Canadian study that would characterize exposures from RF/MW radiation in fire houses with and without cellular antennae, and examine the health status of the fire fighters as a function of their assignment in exposed or unexposed fire houses. Specifically, there is concern for the effects of radio frequency radiation on the central nervous system (CNS) and the immune system, as well as other metabolic effects observed in preliminary studies.

It is the belief of some international governments and regulatory bodies and of the wireless telecommunications industry that no consistent increases in health risk exist from exposure to RF/MW radiation unless the intensity of the radiation is sufficient to heat body tissue. However, it is important to note that these positions are based on non-continuous exposures to the general public to low intensity RF/MW radiation emitted from wireless telecommunications base stations. Furthermore, most studies that are the basis of this position are at least five years old and generally look at the safety of the phone itself. IAFF members are concerned about the effects of living directly under these antenna base stations for a considerable stationary period of time and on a daily basis. There are established biological effects from exposure to low-level RF/MW radiation. Such biological effects are recognized as markers of adverse health effects when they arise from exposure to toxic chemicals for example. The IAFF's efforts will attempt to establish whether there is a correlation between such biological effects and a health risk to fire fighters and emergency medical personnel due to the siting of cell phone antennas and base stations at fire stations and facilities where they work.

### **Background**

Critical questions concerning the health effects and safety of RF/MW radiation remain. Accordingly, should we allow exposure of our fire fighters and emergency medical personnel to this radiation to continue for the next twenty years when there is ongoing controversy over many aspects of RF/MW health effects? While no one disagrees that serious health hazards occur when living cells in the body are heated, as happens with high intensity RF/MW exposure (just like in a microwave oven), scientists are currently investigating the health hazards of low intensity RF/MW exposure. Low intensity RF/MW exposure is exposure which does not raise the temperature of the living cells in the body.

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Additionally, a National Institute of Environmental Health Sciences panel designated power frequency electromagnetic fields (ELF/EMF) as "possible human carcinogens."<sup>(2)</sup> In March 2002 The International Association on Research on Cancer of the World Health Organization also assigned this designation to ELF/EMF in Volume 80 of its *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*.<sup>(3)</sup>

Fixed antennas used for wireless telecommunications are referred to as cellular base stations, cell stations, PCS ("Personal Communications Service") stations or telephone transmission towers. These base stations consist of antennas and electronic equipment. Because the antennas need to be high in the air, they are often located on towers, poles, water tanks, or rooftops. Typical heights for freestanding base station towers are 50-200 feet.

Some base stations use antennas that look like poles, 10 to 15 feet in length, that are referred to as "omni-directional" antennas. These types of antennas are usually found in rural areas. In urban and suburban areas, wireless providers now more commonly use panel or sector antennas for their base stations. These antennas consist of rectangular panels, about 1 by 4 feet in dimension. The antennas are usually arranged in three groups of three antennas each. One antenna in each group is used to transmit signals to wireless phones, and the other two antennas in each group are used to receive signals from wireless phones.

At any base station site, the amount of RF/MW radiation produced depends on the number of radio channels (transmitters) per antenna and the power of each transmitter. Typically, 21 channels per antenna sector are available. For a typical cell site using sector antennas, each of the three transmitting antennas could be connected to up to 21 transmitters for a total of 63 transmitters. When omni-directional antennas are used, a cellular base station could theoretically use up to 96 transmitters. Base stations used for PCS communications generally require fewer transmitters than those used for cellular radio transmissions, since PCS carriers usually have a higher density of base station antenna sites.

The electromagnetic RF/MW radiation transmitted from base station antennas travel toward the horizon in relatively narrow paths. The individual pattern for a single array of sector antennas is wedge-shaped, like a piece of pie. Cellular and PCS base stations in the United States are required to comply with limits for exposure recommended by expert organizations and endorsed by government agencies responsible for health and safety. When cellular and PCS antennas are mounted on rooftops, RF/MW radiation levels on that roof or on others near by would be greater than those typically encountered on the ground.

The telecommunications industry claims cellular antennas are safe because the RF/MW radiation they produce is too weak to cause heating, i.e., a "thermal effect." They point to "safety standards" from groups such as ANSI/IEEE or ICNIRP to support their claims. But these groups have explicitly stated that their

claims of "safe RF/MW radiation exposure is harmless" rest on the fact that it is too weak to produce a rise in body temperature, a "thermal effect."<sup>(4)</sup>

There is a large body of internationally accepted scientific evidence which points to the existence of non-thermal effects of RF/MW radiation. The issue at the present time is not whether such evidence exists, but rather what weight to give it.

Internationally acknowledged experts in the field of RF/MW radiation research have shown that RF/MW transmissions of the type used in digital cellular antennas and phones can have critical effects on cell cultures, animals, and people in laboratories and have also found epidemiological evidence (studies of communities, not in the laboratory) of serious health effects at "non-thermal levels," where the intensity of the RF/MW radiation was too low to cause heating. They have found:

- Increased cell growth of brain cancer cells<sup>(5)</sup>
- A doubling of the rate of lymphoma in mice<sup>(6)</sup>
- Changes in tumor growth in rats<sup>(7)</sup>
- An increased number of tumors in rats<sup>(8)</sup>
- Increased single- and double-strand breaks in DNA, our genetic material<sup>(9)</sup>
- 2 to 4 times as many cancers in Polish soldiers exposed to RF<sup>(10)</sup>
- More childhood leukemia in children exposed to RF<sup>(11)</sup>
- Changes in sleep patterns and REM type sleep<sup>(12)</sup>
- Headaches caused by RF/MW radiation exposure<sup>(13)</sup>
- Neurologic changes<sup>(14)</sup> including:
  - Changes in the blood-brain-barrier<sup>(15)</sup>
  - Changes in cellular morphology (including cell death)<sup>(16)</sup>
  - Changes in neural electrophysiology (EEG)<sup>(17)</sup>
  - Changes in neurotransmitters (which affect motivation and pain perception)<sup>(18)</sup>
  - Metabolic changes (of calcium ions, for instance)<sup>(19)</sup>
  - Cytogenetic effects (which can affect cancer, Alzheimer's, neurodegenerative diseases)<sup>(20)</sup>
- Decreased memory, attention, and slower reaction time in school children<sup>(21)</sup>
- Retarded learning in rats indicating a deficit in spatial "working memory"<sup>(22)</sup>
- Increased blood pressure in healthy men<sup>(23)</sup>
- Damage to eye cells when combined with commonly used glaucoma medications<sup>(24)</sup>

Many national and international organizations have recognized the need to define the true risk of low intensity, non-thermal RF/MW radiation exposure, calling for intensive scientific investigation to answer the open questions. These include:

- The World Health Organization, noting reports of "cancer, reduced fertility, memory loss, and adverse changes in the behavior and development of children."<sup>(25)</sup>
- The U. S. Food and Drug Administration (FDA)<sup>(26)</sup>
- The International Agency for Research on Cancer (IARC)<sup>(27)</sup>
- The Swedish Work Environmental Fund<sup>(28)</sup>

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- The National Cancer Institute (NCI) <sup>(29)</sup>
  - The European Commission (EC) <sup>(30)</sup>
  - New Zealand's Ministry of Health <sup>(31)</sup>
  - National Health and Medical Research Council of Australia <sup>(32)</sup>
  - Commonwealth Scientific Industrial Research Organization of Australia (CSIRO) <sup>(33)</sup>
  - The Royal Society of Canada expert group report prepared for Health Canada <sup>(34)</sup>
  - European Union's REFLEX Project (Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive *in vitro* Methods) <sup>(35)</sup>
  - The Independent Group on Electromagnetic Fields of the Swedish Radiation Protection Board (SSI) <sup>(36)</sup>
  - The United Kingdom's National Radiological Protection Board (NRPB) <sup>(37)</sup>
  - The EMF-Team Finland's Helsinki Appeal 2005 <sup>(38)</sup>

Non-thermal effects are recognized by experts on RF/MW radiation and health to be potential health hazards. Safe levels of RF/MW exposure for these low intensity, non-thermal effects have not yet been established.

The FDA has explicitly rejected claims that cellular phones are "safe." <sup>(39)</sup>

The Environmental Protection Agency (EPA) has stated repeatedly that the current (ANSI/IEEE) RF/MW safety standards protect only against thermal effects. <sup>(40)</sup>

Many scientists and physicians question the safety of exposure to RF/MW radiation. The CSIRO study, for example, notes that there are no clear cutoff levels at which low intensity RF/MW exposure has no effect, and that the results of ongoing studies will take years to analyze. <sup>(41)</sup>

Internationally, researchers and physicians have issued statements that biological effects from low-intensity RF/MW radiation exposure are scientifically established:

- The 1998 Vienna-EMF Resolution <sup>(42)</sup>
- The 2000 Salzburg Resolution on Mobile Telecommunication Base Stations <sup>(43)</sup>
- The 2002 Catania Resolution <sup>(44)</sup>
- The 2002 Freiburger Appeal <sup>(45)</sup>
- The 2004 Report of the European Union's REFLEX Project (Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive *in vitro* Methods) <sup>(46)</sup>
- The 2004 Second Annual Report from Sweden's Radiation Protection Board (SSI) Independent Expert Group on Electromagnetic Fields Recent Research on Mobile Telephony and Health Risks <sup>(47)</sup>
- Mobile Phones and Health 2004: Report by the Board of NRPB (The UK's National Radiological Protection Board) <sup>(48)</sup>



The county of Palm Beach, Florida, the City of Los Angeles, California, and the country of New Zealand have all prohibited cell phone base stations and antennas near schools due to safety concerns. The British Columbia Confederation of Parent Advisory Councils [BCCPAC] passed a resolution in 2003 banning cellular antennae from schools and school grounds. This organization is comparable to the Parent Teachers Association (PTA) in the United States. The resolution was directed to B.C. Ministry of Education, B.C. Ministry of Children and Family Development, B.C. School Trustees Association, and B.C. Association of Municipalities.

## US Government Information

In the United States, the Federal Communications Commission (FCC) has used safety guidelines for RF/MW radiation environmental exposure since 1985.

The FCC guidelines for human exposure to RF/MW radiation are derived from the recommendations of two organizations, the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). In both cases, the recommendations were developed by scientific and engineering experts drawn from industry, government, and academia after extensive reviews of the scientific literature related to the biological effects of RF/MW radiation.

Many countries in Europe and elsewhere use exposure guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The ICNIRP safety limits are generally similar to those of the NCRP and IEEE, with a few exceptions. For example, ICNIRP recommends different exposure levels in the lower and upper frequency ranges and for localized exposure from certain products such as hand-held wireless telephones. Currently, the World Health Organization is working to provide a framework for international harmonization of RF/MW radiation safety standards.

In order to affirm conformity to standards regarding heating of tissue, measurements are time averaged over 0.1 hours [6 minutes]. This method eliminates any spikes in the readings. Computer power bars have surge protectors to prevent damage to computers. **Fire fighters and emergency medical personnel do not!**

The NCRP, IEEE, and ICNIRP all have identified a whole-body Specific Absorption Rate (SAR) value of 4 watts per kilogram (4 W/kg) as a threshold level of exposure at which harmful biological thermal effects due to tissue heating may occur. Exposure guidelines in terms of field strength, power density and localized SAR were then derived from this threshold value. In addition, the NCRP, IEEE, and ICNIRP guidelines vary depending on the frequency of the RF/MW radiation exposure. This is due to the finding that whole-body human absorption of RF/MW radiation varies with the frequency of the RF signal. The

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most restrictive limits on whole-body exposure are in the frequency range of 30-300 MHz where the human body absorbs RF/MW energy most efficiently. For products that only expose part of the body, such as wireless phones, exposure limits in terms of SAR only are specified.

Similarly, the exposure limits used by the FCC are expressed in terms of SAR, electric and magnetic field strength, and power density for transmitters operating at frequencies from 300 kHz to 100 GHz. The specific values can be found in two FCC bulletins, OET Bulletins 56 and 65.

OET Bulletin 56, *"Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields"* was designed to provide factual information to the public by answering some of the most commonly asked questions. It includes the latest information on FCC guidelines for human exposure to RF/MW radiation. Further information and a downloadable version of Bulletin 56 can be found at: <http://www.fcc.gov/oet/info/documents/bulletins/#56>

OET Bulletin 65, *"Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields"* was prepared to provide assistance in determining whether proposed or existing transmitting facilities, operations or devices comply with limits for human exposure to RF/MW radiation adopted by the Federal Communications Commission (FCC). Further information and a downloadable version of Bulletin 65 can be found at: <http://www.fcc.gov/oet/info/documents/bulletins/#65>

The FCC authorizes and licenses products, transmitters, and facilities that generate RF and microwave radiation. It has jurisdiction over all transmitting services in the U.S. except those specifically operated by the Federal Government. Under the National Environmental Policy Act of 1969 (NEPA), the FCC has certain responsibilities to consider whether its actions will significantly affect the quality of the human environment. Therefore, FCC approval and licensing of transmitters and facilities must be evaluated for significant impact on the environment. Human exposure to RF radiation emitted by FCC-regulated transmitters is one of several factors that must be considered in such environmental evaluations. In 1996, the FCC revised its guidelines for RF/MW radiation exposure as a result of a multi-year proceeding and as required by the Telecommunications Act of 1996.

For further information and answers to questions about the safety of RF/MW radiation from transmitters and facilities regulated by the FCC go to <http://www.fcc.gov/oet/rfsafety/rf-faqs.html>.

## **Canadian Government Information**

Industry Canada is the organization that sets regulatory requirements for electromagnetic spectrum management and radio equipment in Canada. Industry Canada establishes standards for equipment certification and, as part of these standards, developed RSS-102, which specifies permissible radiofrequency RF/MW radiation levels. For this purpose, Industry Canada adopted the limits outlined in Health Canada's Safety-Code 6, which is a guideline document for limiting RF exposure. A downloadable version of "*RSS-102 - Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields*", as well as additional information can be found at: [http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/vwapj/rss102.pdf/\\$FILE/rss102.pdf](http://strategis.ic.gc.ca/epic/internet/insmt-gst.nsf/vwapj/rss102.pdf/$FILE/rss102.pdf).

Safety Code 6 specifies the requirements for the use of radiation emitting devices. This Code replaces the previous Safety Code 6 - EHD-TR-160. A downloadable version of "*Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz TO 300 GHz - Safety Code 6*", as well as further detailed information can be found at <http://www.hc-sc.gc.ca/hecs-sesc/ccrpb/publication/99ehd237/toc.htm>.

## **US and Canadian Legal Issues**

Although some local and state governments have enacted rules and regulations about human exposure to RF/MW radiation in the past, the Telecommunications Act of 1996 requires the United States Federal Government to control human exposure to RF/MW radiation. In particular, Section 704 of the Act states that, "No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions." Further information on federal authority and FCC policy is available in a fact sheet from the FCC's Wireless Telecommunications Bureau at [www.fcc.gov/wtb](http://www.fcc.gov/wtb).

In a recent opinion filed by Senior Circuit Judge Stephen F. Williams, No. 03-1336 *EMR Network v. Federal Communications Commission and United States of America*, the Court upheld the FCC's decision not to initiate an inquiry on the need to revise its regulations to address non-thermal effects of radiofrequency (RF) radiation from the facilities and products subject to FCC regulation as EMR Network had requested in its September 2001 Petition for Inquiry.

At the request of the EMR Network, the EMR Policy Institute provided legal and research support for this appeal. On January 13, 2005, a Petition for Rehearing *en banc* by the full panel of judges at the DC Circuit Court of Appeals was filed. Briefs, background documents and the DC Circuit decision are found at: [http://www.emrpolicy.org/litigation/case\\_law/index.htm](http://www.emrpolicy.org/litigation/case_law/index.htm).

The Toronto Medical Officer of Health for the Toronto Board of Health recommended to Health Canada that public exposure limits for RF/MW radiation be made 100 times stricter; however the recommendation was not allowed, since, as in the US, only the Canadian federal government can regulate RF/MW radiation exposure level.

## **World Health Organization Efforts**

In 1996, the World Health Organization (WHO) established the International EMF Project to review the scientific literature and work towards resolution of health concerns over the use of RF/MW technology. WHO maintains a Web site that provides addition information on this project and about RF/MW biological effects and research. For further information go to <http://www.who.int/peh-emf/en/>.

## **Conclusion**

For decades, the International Association of Fire Fighters has been directly involved in protecting and promoting the health and safety of our membership. However, we simply don't know at this time what the possible health consequences of long-term-exposure to low-intensity RF/MW radiation of the type used by the cell phone base stations and antennas will be. No one knows--the data just aren't there. The chairman of the International Commission on Non-ionizing Radiation Protection (ICNIRP), one of the leading international organizations which formulated the current RF/MW radiation exposure guidelines, has stated that the guidelines include "no consideration regarding prudent avoidance" for health effects for which evidence is less than conclusive<sup>(49)</sup>

Again, fire department facilities, where fire fighters and emergency response personnel live and work are not the proper place for a technology which could endanger their health and safety

The only reasonable and responsible course is to conduct a study of the highest scientific merit and integrity on the RF/MW radiation health effects to our membership and, in the interim, oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions until it is proven that such sitings are not hazardous to the health of our members.

## **Footnotes**

[back] 1. Revised and Amended IAFF Resolution No. 15; August 2004

## **Study of Firefighters Exposed to Radio Frequency (RF) Radiation from Cell Towers/Masts**

**WHEREAS**, fire stations across the United States and Canada are being sought by wireless companies as base stations for the antennas and towers for the conduction of cell phone transmissions; and

**WHEREAS**, many firefighters who are living with cell towers on or adjacent to their stations are paying a substantial price in terms of physical and mental health. As first responders and protectors of the general public, it is crucial that firefighters are functioning at optimal cognitive and physical capacity at all times; and

**WHEREAS**, the brain is the first organ to be affected by RF radiation and symptoms manifest in a multitude of neurological conditions including migraine headaches, extreme fatigue, disorientation, slowed reaction time, vertigo, vital memory loss and attention deficit amidst life threatening emergencies; and

**WHEREAS**, most of the firefighters who are experiencing symptoms can attribute the onset to the first week(s) these towers/antennas were activated; and

**WHEREAS**, RF radiation is emitted by these cellular antennas and RF radiation can penetrate every living cell, including plants, animals and humans; and

**WHEREAS**, both the U. S. and Canadian governments established regulatory limits for RF radiation based on thermal (heat) measurements with no regard for the adverse health effects from non-thermal radiation which is proven to harm the human brain and immune system; and

**WHEREAS**, the U. S. Environmental Protection Agency stated in a July 16, 2002, letter, "Federal health and safety agencies have not yet developed policies concerning possible risk from long-term, non-thermal exposures. The FCC's exposure guideline is considered protective of effects arising from a thermal mechanism (RF radiation from cell towers is non-thermal) but not from all possible mechanisms. Therefore, the generalization by many that the guidelines protecting human beings from harm by any or all mechanisms is not justified"; and

**WHEREAS**, an Expert Panel Report requested by the Royal Society of Canada prepared for Health Canada (1999) stated that, "Exposure to RF fields at intensities far less than levels required to produce measurable heating can cause effects in cells and tissues. These biological effects include alterations in the activity of the enzyme ornithine decarboxylase, in calcium regulation, and in the permeability of the blood-brain barrier. Some of these biological effects brought about by non-thermal exposure levels of RF could potentially be associated with adverse health effects"; and

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**WHEREAS**, based on concerns over growing scientific evidence of dangers from RF radiation, an international conference was convened in Salzburg, Austria, in the summer of 2000 where renowned scientists declared the upper-most RF radiation exposure limit from a tower-mast should be 1/10th of 1 microwatt (Note that 1/10th of 1 microwatt is 10,000 times lower than the uppermost limit allowed by the U. S. or Canada.); and it should be noted this limit was set because of study results showing brain wave changes at 1/10th of 1 microwatt; and

**WHEREAS**, in a recently cleared paper by Dr. Richard A. Albanese of the U. S. Air Force, a highly recognized physician in the area of the impact of radiation on the human body, Dr. Albanese states, "I would ask a good faith effort in achieving as low exposure rates as are possible within reasonable financial constraints. Also I would fund targeted studies using animal subjects and human groups living or working in high radiation settings or heavy cellular phone users, emphasizing disease causations. I urge acceptance of the ideal that there should be no unmonitored occupational or environmental exposures whose associated disease rates are unknown." (The opinions expressed herein are those of Dr. Albanese, and do not reflect the policies of the United States Air Force.); and

**WHEREAS**, recently a study, not affiliated with the wireless industry, was conducted of firefighters exposed to RF radiation from cell towers/antennas affixed to their stations.\*\* The study revealed brain damage that can be differentiated from chemical causation (such as inhalation of toxic smoke) suggesting RF radiation as the cause of the brain damage found on SPECT scans; and

**WHEREAS**, firefighters are the protectors of people and property and should be protected under the Precautionary Principle of Science and therefore, unless radiation is proven safe and harmless, cellular antennas should not be placed on or near fire stations; therefore be it

**RESOLVED**, That the IAFF shall seek funding for an initial U. S. and Canadian study with the highest scientific merit and integrity, contrasting firefighters with residence in stations with towers to firefighters without similar exposure; and be it further

**RESOLVED**, That in accordance with the results of the study, the IAFF will establish protective policy measures with the health and safety of all firefighters as the paramount objective; and be it further

**RESOLVED**, That the IAFF oppose the use of fire stations as base stations for antennas and towers for the conduction of cell phone transmissions until such installations are proven not to be hazardous to the health of our members.

**\*\*Note:** A pilot study was conducted in 2004 of six California fire fighters working and sleeping in stations with towers. The study, conducted by Gunnar Heuser,

M.D., PhD. of Agoura Hills, CA, focused on neurological symptoms of six fire fighters who had been working for up to five years in stations with cell towers. Those symptoms included slowed reaction time, lack of focus, lack of impulse control, severe headaches, anesthesia-like sleep, sleep deprivation, depression, and tremors. Dr. Heuser used functional brain scans - SPECT scans - to assess any changes in the brains of the six fire fighters as compared to healthy brains of men of the same age. Computerized psychological testing known as TOVA was used to study reaction time, impulse control, and attention span. The SPECT scans revealed a pattern of abnormal change which was concentrated over a wider area than would normally be seen in brains of individuals exposed to toxic inhalation, as might be expected from fighting fires. Dr. Heuser concluded the only plausible explanation at this time would be RF radiation exposure. Additionally, the TOVA testing revealed among the six fire fighters delayed reaction time, lack of impulse control, and difficulty in maintaining mental focus.

[back] 2. An international blue ribbon panel assembled by the National Institute of Environmental Health Sciences (NIEHS) designated power frequency electromagnetic fields (EMF) as "possible human carcinogens" on June 24, 1998. The panel's decision was based largely on the results of epidemiological studies of children exposed at home and workers exposed on the job. The evaluation of the EMF literature followed procedures developed by the International Agency for Research on Cancer (IARC), based in Lyon, France. The working group's report will be the basis for the NIEHS report to Congress on the EMF Research and Public Information Dissemination program (EMF RAPID). The National Radiological Protection Board (NRPB) of the United Kingdom noted that the views of its Advisory Group on Non-Ionizing Radiation are "consistent with those of the NIEHS expert panel."

*June 26, 1998 statement of the National Radiological Protection Board, cited in Microwave News, July/August 1998*

[back] 3. World Health Organization; International Agency for Research on Cancer; IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; Volume 80 Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields; 2002; 429 pages; ISBN 92 832 1280 0; See <http://www-cie.iarc.fr/htdocs/monographs/vol80/80>. This IARC Monograph provides the rationale for its designation of ELF/EMF as a possible human carcinogen. It states that:

*A few studies on genetic effects have examined chromosomal aberrations and micronuclei in lymphocytes from workers exposed to ELF electric and magnetic fields. In these studies, confounding by genotoxic agents (tobacco, solvents) and comparability between the exposed and control groups are of concern. Thus, the studies reporting an increased frequency of chromosomal aberrations and micronuclei are difficult to interpret.*

*Many studies have been conducted to investigate the effects of ELF magnetic fields on various genetic end-points. Although increased DNA strand breaks have*

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been reported in brain cells of exposed rodents, the results are inconclusive; most of the studies show no effects in mammalian cells exposed to magnetic fields alone at levels below 50  $\mu$ T. However, extremely strong ELF magnetic fields have caused adverse genetic effects in some studies. In addition, several groups have reported that ELF magnetic fields enhance the effects of known DNA- and chromosome-damaging agents such as ionizing radiation.

The few animal studies on cancer-related non-genetic effects are inconclusive. Results on the effects on in-vitro cell proliferation and malignant transformation are inconsistent, but some studies suggest that ELF magnetic fields affect cell proliferation and modify cellular responses to other factors such as melatonin. An increase in apoptosis following exposure of various cell lines to ELF electric and magnetic fields has been reported in several studies with different exposure conditions. Numerous studies have investigated effects of ELF magnetic fields on cellular end-points associated with signal transduction, but the results are not consistent.

[back] 4. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) statement "Health Issues Related to the Use of Hand-Held Radiotelephones and Base Transmitters" of 1996 reads:

"Thermally mediated effects of RF fields have been studied in animals, including primates. These data suggest effects that will probably occur in humans subjected to whole body or localized heating sufficient to increase tissue temperatures by greater than 1C. They include the induction of opacities of the lens of the eye, possible effects on development and male fertility, various physiological and thermoregulatory responses to heat, and a decreased ability to perform mental tasks as body temperature increases. Similar effects have been reported in people subject to heat stress, for example while working in hot environments or by fever. The various effects are well established and form the biological basis for restricting occupational and public exposure to radiofrequency fields. In contrast, non-thermal effects are not well established and currently do not form a scientifically acceptable basis for restricting human exposure for frequencies used by hand-held radiotelephones and base stations."

*International Commission on Non-Ionizing Radiation Protection, "Health Issues Related to the Use of Hand-Held Radiotelephones and Base Transmitters," Health Physics 70:587-593, 1996*

The ANSI/IEEE Standard for Safety Levels of 1992 similarly states:

"An extensive review of the literature revealed once again that the most sensitive measurements of potentially harmful biological effects were based on the disruption of ongoing behavior associated with an increase of body temperature in the presence of electromagnetic fields. Because of the paucity of reliable data on chronic exposures, IEEE Subcommittee IV focused on evidence of behavioral



disruption under acute exposures, even disruption of a transient and fully reversible nature."

*IEEE Standards Coordinating committee 28 on Non-Ionizing Radiation Hazards: Standard for Safe Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 KHz to 300 GHz (ANSI/IEEE C95.1-1991), The Institute of Electrical and Electronics Engineers, New York, 1992.*

[back] 5. Drs. Czerska, Casamento, Ning, and Davis (working for the Food and Drug Administration in 1997) using "a waveform identical to that used in digital cellular phones" at a power level within our current standards (SAR of 1.6 W/Kg, the maximum spatial peak exposure level recommended for the general population in the ANSI C95.1-1991 standard) found increases in cellular proliferation in human glioblastoma cells. This shows that "acceptable" levels of radiation can cause human cancer cells to multiply faster. The authors note that "because of reported associations between cellular phone exposure and the occurrence of a brain tumor, glioblastoma, a human glioblastoma cell line was used" in their research.

*E.M. Czerska, J. Casamento, J. T. Ning, and C. Davis, "Effects of Radiofrequency Electromagnetic Radiation on Cell Proliferation," [Abstract presented on February 7, 1997 at the workshop 'Physical Characteristics and Possible Biological Effects of Microwaves Applied in Wireless Communication, Rockville, MD] E. M. Czerska, J. Casamento Centers for Devices and Radiological Health, Food and Drug Administration, Rockville, Maryland 20857, USA; H. T. Ning, Indian Health Service, Rockville, Maryland 20857, USA; C. Davis, Electrical Engineering Dept., Univ. of Maryland, College Park, Maryland 20742, USA*

[back] 6. Dr. Michael Repacholi (in 1997, currently the director of the International Electromagnetic Fields Project at the World Health Organization) took one hundred transgenic mice and exposed some to radiation for two 30 minute periods a day for up to 18 months. He found that the exposed mice developed lymphomas (a type of cancer) at twice the rate of the unexposed mice. While telecommunications industry spokespersons criticized the experiment for using mice with a mutation which predisposed them to cancer (transgenic) the researchers pointed out that "some individuals inherit mutations in other genes...that predispose them to develop cancer, and these individuals may comprise a subpopulation at special risk from agents that would pose an otherwise insignificant risk of cancer."

Dr. Repacholi stated "I believe this is the first animal study showing a true non-thermal effect." He repeated the experiment in 1998 using 50 Hz fields instead of the 900 MHz pulsed radiation (the type used by cellular phones) used in the original experiment and found no cancer risk. He stated that this new data had implications for his original cellular phone study: "the control groups for both our

RF and 50 Hz field studies showed no statistical differences, which lessens the possibility that the RF/MW radiation study result was a chance event or due to errors in methodology."

It is extremely important to note that Dr. Michael Repacholi was Chairman of the ICNIRP at the time its Statement on Health Issues Related to the Use of Hand-Held Radiotelephones and Base Transmitters was developed in 1996.

*M. Repacholi et al., "Lymphomas in Eμ-Pim1 Transgenic Mice Exposed to Pulsed 900 MHz Electromagnetic Fields," Radiation Research, 147, pp.631-640, May 1997*

[back] 7. Dr. Ross Adey (Veterans Administration Hospital at Loma Linda University in 1996) found what appeared to be a protective effect in rats exposed to the type of radiation used in digital cellular phones. The rats were exposed to an SAR of 0.58-0.75 W/Kg 836 MHz pulsed radiation of the TDMA type two hours a day, four days a week for 23 months, with the signals turned on and off every 7.5 minutes, so total exposure was 4 hours a week. Interestingly this effect was not present when a non-digital, analog signal was used. Rats exposed developed cancer less often. This study shows that low power fields of the digital cellular frequency can influence cancer development. Whether they would protect or promote in our children is a question for further study.

*Ross Adey of the Veterans Administration Hospital at Loma Linda University, CA presented the results of pulsed (digital cellular) radiation on June 13, 1996 at the 18<sup>th</sup> Annual Meeting of the Bioelectromagnetics Society in Victoria, Canada. He presented the findings of the analog cellular phone radiation effect at the June 1997 2<sup>nd</sup> World Congress for Electricity and Magnetism in Biology and Medicine in Bologna, Italy. Reviews can be found in Microwave News issues July/August, 1996 and March/April 1997.*

In recognition of his more than three decades of "fundamental contributions to the emerging science of the biological effects of electromagnetic fields," the authors of the November 2004 Report of the European Union's REFLEX Project (*Risk Evaluation of Potential Environmental Hazards From Low Frequency Electromagnetic Field Exposure Using Sensitive in vitro Methods*) chose to include Dr. Adey's personal views on Electromagnetic Field Exposure research as the Foreword to that report. To view the entire report, see: [http://www.itis.ethz.ch/downloads/REFLEX\\_Final%20Report\\_171104.pdf](http://www.itis.ethz.ch/downloads/REFLEX_Final%20Report_171104.pdf)

The following is taken from Dr. Adey's Foreword found on pages 1-3 of the REFLEX Report:

*The Future of Fundamental Research in a Society Seeking Categorical Answers to Health Risks of New Technologies*

*In summary, we have become superstitious users of an ever-growing range of technologies, but we are now unable to escape the web that they have woven around us.*

*Media reporters in general are no better informed. Lacking either responsibility or accountability, they have created feeding frenzies from the tiniest snippets of information gleaned from scientific meetings or from their own inaccurate interpretation of published research. In consequence, the public has turned with pleading voices to government legislatures and bureaucracies for guidance . . .*

*We face the problem brought on by the blind leading the blind. Because of public pressure for rapid answers to very complex biological and physical issues, short-term research programs have been funded to answer specific questions about certain health risks.*

*In many countries, and particularly in the USA, the effects of such harassing and troublesome tactics on independent, careful fundamental research have been near tragic. Beguiled by health hazard research as the only source of funding, accomplished basic scientists have diverted from a completely new frontier in physical regulation of biological mechanisms at the atomic level. Not only have governments permitted corporate interests in the communications industry to fund this research, they have even permitted them to determine the research questions to be addressed and to select the institutions performing the research.*

[back] 8. Dr. A. W. Guy reported an extensive investigation on rats chronically exposed from 2 up to 27 months of age to low-level pulsed microwaves at SARs up to 0.4 W/Kg. The exposed group was found to have a significantly higher incidence of primary cancers.

A. W. Guy, C. K. Chou, L. Kunz, L. Crowley, and J. Krupp, "Effects of Long-Term Low-Level Radiofrequency Radiation Exposure on Rats." Volume 9. Summary. Brooks Air Force Base, Texas, USAF School of Aerospace Medicine, USF-SAM-TR-85-11; 1985

[back] 9. Drs. Henry Lai and N. P. Singh of the University of Washington in Seattle have reported both single- and double-strand DNA breaks in the brains of rats exposed to radiofrequency electromagnetic radiation at an SAR of 1.2 W/Kg. DNA is the carrier of the genetic information in all living cells. Cumulated DNA strand breaks in brain cells can lead to cancer or neurodegenerative diseases.

H. Lai and N. P. Singh, "Single- and Double-Strand DNA Breaks in Rat Brain Cells After Acute Exposure to Radiofrequency Electromagnetic Radiation," *International Journal of Radiation Biology*, Vol 69, No. 4, 513-521, 1996

[back] 10. Dr. Stanislaw Szmigielski has studied many thousands of Polish soldiers. He has found that those exposed to radiofrequency and microwave

radiation in the workplace had more than double the cancer rate of the unexposed servicemen analyzing data from 1971-1985. He has presented further data suggesting a dose-response relationship with soldiers exposed to 100-200 W/cm<sup>2</sup> suffering 1.69 times as many cancers as the unexposed, and those exposed to 600-1000 W/cm<sup>2</sup> suffering 4.63 times as many cancers. The level considered safe for the public according to FCC regulations is 1000 W/cm<sup>2</sup>. Occupational exposure up to 5000 W/cm<sup>2</sup> is allowed.

*S. Szmigielski, "Cancer Morbidity in Subjects Occupationally Exposed to High Frequency (Radiofrequency and Microwave) Electromagnetic Radiation," The Science of the Total Environment 180:9-17, 1996*

[back] 11. Dr. Bruce Hocking found an association between increased childhood leukemia incidence and mortality in the proximity of television towers. The power density ranged from 0.2-8.0 W/cm<sup>2</sup> nearer and 0.02 W/cm<sup>2</sup> farther from the towers.

*B. Hocking, I. R. Gordon, H. L. Grain, and G. E. Hatfield, "Cancer Incidence and Mortality and Proximity to TV Towers," Medical Journal of Australia 165: 601-605; 1996*

[back] 12. Drs. Mann and Röscke investigated the influence of pulsed high-frequency RF/MW radiation of digital mobile radio telephones on sleep in healthy humans. They found a hypnotic effect with shortening of sleep onset latency and a REM (Rapid Eye Movement) suppressive effect with reduction of duration and percentage of REM sleep. "REM sleep plays a special physiological role for information processing in the brain, especially concerning consolidation of new experiences. Thus the effects observed possibly could be associated with alterations of memory and learning functions."

*K. Mann and J. Röscke, "Effects of Pulsed High-Frequency Electromagnetic Fields on Human Sleep," Neuropsychobiology 33:41-47, 1996*

[back] 13. Dr. Allen Frey has been researching RF/MW radiation for over 3 decades. Here is the abstract on a paper concerning headaches and cellular phone radiation. "There have been numerous recent reports of headaches occurring in association with the use of hand-held cellular telephones. Are these reported headaches real? Are they due to emissions from telephones? There is reason to believe that the answer is "yes" to both questions. There are several lines of evidence to support this conclusion. First, headaches as a consequence of exposure to low intensity microwaves were reported in the literature 30 years ago. These were observed during the course of microwave hearing research before there were cellular telephones. Second, the blood-brain barrier appears to be involved in headaches, and low intensity microwave energy exposure affects the barrier. Third, the dopamine-opiate systems of the brain appear to be involved in headaches, and low intensity electromagnetic energy exposure

affects those systems. In all three lines of research, the microwave energy used was approximately the same--in frequencies, modulations, and incident energies--as those emitted by present day cellular telephones. Could the current reports of headaches be the canary in the coal mine, warning of biologically significant effects?"

A. H. Frey, *"Headaches from Cellular Telephones: Are they Real and What Are the Implications?" Environmental Health Perspectives Volume 106, Number 3, pp.101-103, March 1998*

[back] 14. Henry Lai's review of the literature concerning neurological effects of RF/MW radiation: Existing data indicate that RF/MW radiation of relatively low intensity can affect the nervous system. Changes in blood-brain barrier, morphology, electrophysiology, neurotransmitter functions, cellular metabolism, and calcium efflux, and genetic effects have been reported in the brain of animals after exposure to RF. These changes can lead to functional changes in the nervous system. Behavioral changes in animals after exposure to RR have been reported.

Even a temporary change in neural functions after RF/MW radiation exposure could lead to adverse consequences. For example, a transient loss of memory function or concentration could result in an accident when a person is driving. Loss of short term working memory has indeed been observed in rats after acute exposure to RF/MW radiation.

Research has also shown that the effects of RF/MW radiation on the nervous system can cumulate with repeated exposure. The important question is, after repeated exposure, will the nervous system adapt to the perturbation and when will homeostasis break down? Related to this is that various lines of evidence suggest that responses of the central nervous system to RF/MW radiation could be a stress response. Stress effects are well known to cumulate over time and involve first adaptation and then an eventual break down of homeostatic processes.

H. Lai, *"Neurological Effects of Radiofrequency Electromagnetic Radiation Relating to Wireless Communication Technology," Paper presentation at the IBC-UK Conference: "Mobile Phones-Is There a Health Risk?" September 16-17, 1997, Brussels, Belgium*

[back] 15. Blood-Brain-Barrier: The blood-brain-barrier (BBB) is primarily a continuous layer of cells lining the blood vessels of the brain. It is critical for regulation of the brain's activity. Lai notes that "Even though most studies indicate that changes in the BBB occurs only after exposure to RF/MW radiation of high intensities with significant increase in tissue temperature, several studies have reported increases in permeability after exposure to RF/MW radiation of relatively low intensities...Pulsed RF seems to be more potent than continuous

wave RF." Pulsed RF/MW is the type used in digital cellular systems. Effects on the BBB were noted at the  $0.2 \text{ W/cm}^2$  level, and even at SAR of  $0.016\text{-}5 \text{ W/kg}$ . These effects could lead to local changes in brain function.

*H. Lai, Ibid*

[back] 16. Cellular Morphology: RF/MW radiation induced morphological changes of the central nervous system cells and tissues have been shown to occur under relatively high intensity or prolonged exposure to the RF/MW radiation. However, there are several studies which show that repeated exposure at relatively low power intensities caused morphological changes in the central nervous system. Again here pulsed (as in digital phone use) RF/MW radiation produced more pronounced effects. Certain drugs given to nonhuman primates sensitized them, for instance allowing eye damage to occur at very low power intensities. Dr Lai notes "Changes in morphology, especially cell death, could have an important implication on health. Injury-induced cell proliferation has been hypothesized as a cause of cancer." Some of these experiments were in the range of SAR  $0.53 \text{ W/kg}$  or even  $0.26 \text{ W/kg}$ .

*H. Lai, Ibid*

[back] 17. Neural Electrophysiology: Changes in neuronal electrophysiology, evoked potentials, and EEG have been reported. Some effects were observed at low intensities and after repeated exposure, suggesting cumulative effect. Energy density levels were as low as  $50 \text{ W/cm}^2$ .

*H. Lai, Ibid*

[back] 18. Neurotransmitters: Neurotransmitters are molecules which transmit information from one nerve cell to another. Early studies have reported changes in various neurotransmitters (catecholamines, serotonin, and acetylcholine) in the brain of animals only after exposure to high intensities of RF/MW radiation. However, there are more recent studies that show changes in neurotransmitter functions after exposure to low intensities of RF radiation. For example, effects were seen at  $50 \mu\text{W/cm}^2$  in one experiment. U.S. and Canadian RF/MW radiation safety policies allow exposures of  $1000 \mu\text{W/cm}^2$  at that frequency.

RF/MW radiation activates endogenous opioids in the brain. Endogenous opioids are neurotransmitters with morphine-like properties and are involved in many important physiological and behavioral functions, such as pain perception and motivation.

The response to RF/MW radiation depends on the area of the brain studied and on the duration of exposure. Exposure to RF/MW radiation has been shown to affect the behavioral actions of benzodiazepines (these are drugs such as Valium).

*H. Lai, Ibid*

[back] 19. Metabolic Changes in Neural Tissue: Several studies investigated the effects of RF/MW radiation exposure on energy metabolism in the rat brain. Surprisingly, changes were reported after exposure to relatively low intensity RF/MW radiation for a short duration of time (minutes). The effects depended on the frequency and modulation characteristics of the RF/MW radiation and did not seem to be related to temperature changes in the tissue.

Calcium ions play important roles in the functions of the nervous system, such as the release of neurotransmitters and the actions of some neurotransmitter receptors. Thus changes in calcium ion concentration could lead to alterations in neural functions. This is an area of considerable controversy because some researchers have also reported no significant effects of RF/MW radiation exposure on calcium efflux. However, when positive effects were observed, they occurred after exposure to RF/MW radiation of relatively low intensities and were dependent on the modulation and intensity of the RF/MW radiation studied (window effects). Some studies had SARs as low as 0.05-0.005 W/Kg.

*H. Lai, Ibid*

[back] 20. Cytogenetic effects have been reported in various types of cells after exposure to RF/MW radiation. Recently, several studies have reported cytogenetic changes in brain cells by RF/MW radiation, and these results could have important implication for the health effects of RF/MW radiation. Genetic damage to glial cells can result in carcinogenesis. However, since neurons do not undergo mitosis, a more likely consequence of neuronal genetic damage is changes in functions and cell death, which could either lead to or accelerate the development of neurodegenerative diseases. Power densities of 1 mW/cm<sup>2</sup> were employed, a level considered safe for the public by the FCC.

RF/MW radiation -induced increases in single and double strand DNA breaks in rats can be blocked by treating the rats with melatonin or the spin-trap compound N-t-butyl--phenylnitron. Since both compounds are potent free radical scavengers, these data suggest that free radicals may play a role in the genetic effect of RF. If free radicals are involved in the RF-induced DNA strand breaks in brain cells, results from this study could have an important implication on the health effects of RF exposure. Involvement of free radicals in human diseases, such as cancer and atherosclerosis, has been suggested. Free radicals also play an important role in the aging process, which has been ascribed to be a consequence of accumulated oxidative damage to body tissues, and involvement of free radicals in neurodegenerative diseases, such as Alzheimer's, Huntington, and Parkinson, has also been suggested. One can also speculate that some individuals may be more susceptible to the effects of RF/MW radiation exposure.

*H. Lai, Ibid*

[back] 21. Dr. A. A. Kolodynski and V. V. Kolodynska of the Institute of Biology, Latvian Academy of Sciences, presented the results of experiments on school children living in the area of the Skrunda Radio Location Station in Latvia. Motor function, memory, and attention significantly differed between the exposed and control groups. The children living in front of the station had less developed memory and attention and their reaction time was slower.

A. A. Kolodynski, V. V. Kolodynska, "Motor and Psychological Functions of School Children Living in the Area of the Skrunda Radio Location Station in Latvia," *The Science of the Total Environment* 180:87-93, 1996

[back] 22. Dr. H. Lai and colleagues in 1993 exposed rats to 45 minutes of pulsed high frequency RF/MW radiation at low intensity and found that the rats showed retarded learning, indicating a deficit in spatial "working memory" function.

H Lai, A. Horita, and A. W. Guy, "Microwave Irradiation Affects Radial-Arm Maze Performance in the Rat," *Bioelectromagnetics* 15:95-104, 1994

**NOTE:** Dr. Lai's January 2005 compilation of published RF/MW radiation studies demonstrating biological effects of exposure to low-intensity RF/MW radiation is included as a Reference section at the end of this report.

[back] 23. Dr. Stefan Braune reported a 5-10 mm Hg resting blood pressure rise during exposure to RF/MW radiation of the sort used by cellular phones in Europe. The Lancet, the British medical journal where the report appeared, stated that "Such an increase could have adverse effects on people with high blood pressure."

S. Braune, "Resting Blood Pressure Increase During Exposure to a Radio-Frequency Electromagnetic Field," *The Lancet* 351, pp. 1,857-1,858, 1998

[back] 24. Dr. Kues and colleagues (of Johns Hopkins University and the Food and Drug Administration) found that placing timolol and pilocarpine into the eyes of monkeys and then exposing them to low power density pulsed RF/MW radiation caused a significant reduction in the power-density threshold for causing damage to the cells covering the eye and the iris. In fact the power was reduced by a factor of 10, so that it entered the "acceptable, safe" level of the FCC, 1 mW/cm<sup>2</sup>! Timolol and pilocarpine are commonly used by people suffering from glaucoma. This is a very important study, as it points to the fact that laboratory experiments under "ideal" conditions are rarely what one finds in real life. The "safe" level of RF/MW radiation exposure for healthy people is likely to be very different than for those of us who suffer from illness, take medications, or are perhaps simply younger or older than those in the experiments.



H. A. Kues, J. C. Monahan, S. A. D'Anna, D. S. McLeod, G. A. Luty, and S. Koslov, "Increased Sensitivity of the Non-Human Primate Eye to Microwave Radiation Following Ophthalmic Drug Pretreatment," *Bioelectromagnetics* 13:379-393, 1992

[back] 25. The World Health Organization states that "concerns have been raised about the safety of cellular mobile telephones, electric power lines and police speed-control 'radar guns.' Scientific reports have suggested that exposure to electromagnetic fields emitted from these devices could have adverse health effects, such as cancer, reduced fertility, memory loss, and adverse changes in the behaviour and development of children." Therefore, "In May 1996, in response to growing public health concerns in many Member States over possible health effects from exposure to an ever-increasing number and diversity of EMF sources, the World Health Organization launched an international project to assess health and environmental effects of exposure to electric and magnetic fields, which became known as the International EMF Project. The International EMF Project will last for five years." "A number of studies at [frequencies above about 1 MHz] suggest that exposure to RF fields too weak to cause heating may have adverse health consequences, including cancer and memory loss. Identifying and encouraging coordinated research into these open questions is one of the major objectives of the International EMF Project."

*World Health Organization Fact Sheet N181, "Electromagnetic Fields and Public Health, The International EMF Project," reviewed May 1998 and World Health Organization Fact Sheet N182, "Electromagnetic Fields and Public Health, Physical Properties and Effects on Biological Systems," reviewed May 1998,*

[back] 26. The U. S. Food and Drug Administration in a January 14, 1998 letter to the House Telecommunications Subcommittee stated it "believes additional research in the area of RF is needed." In 1997 the FDA established the following priorities:

- Chronic (lifetime) animal exposures should be given the highest priority.
- Chronic animal exposures should be performed both with and without the application of chemical initiating agents to investigate tumor promotion in addition to tumorigenesis.
- Identification of potential risks should include end points other than brain cancer (e.g. ocular effects of RF radiation exposure).
- Replication of prior studies demonstrating positive biological effects work is needed. A careful replication of the Chou and Guy study (*Bioelectromagnetics*, 13, pp.469-496, 1992) which suggests that chronic exposure of rats to microwaves is associated with an increase in tumors, would contribute a great deal to the risk identification process for wireless communication products.
- Genetic toxicology studies should focus on single cell gel studies of DNA strand breakage and on induction of micronuclei.
- Epidemiology studies focused on approaches optimized for hazard identification are warranted.

*Food and Drug Administration Recommendations quoted in Microwave News, March/April, 1997*

[back] 27. The International Agency for Research on Cancer (IARC) is planning a multi-country, multi-million dollar study of cancer among users of wireless phones, beginning 1998. *Microwave News, January/February, 1998*

[back] 28. The Swedish Work Environmental Fund initiated a new epidemiological study on cellular phone radiation and brain tumors in 1997. *Microwave News, November/December, 1997*

[back] 29. The National Cancer Institute announced plans for a 5 year study of brain tumors and RF/MW radiation in 1993. *Microwave News, January/February, 1993*

[back] 30. The European Commission (EC) Expert Group on health effects of wireless phones called for a 5 year research program with a \$20 million budget, reported 1997. *Microwave News, January/February, 1997*

[back] 31. A report commissioned by New Zealand's Ministry of Health stated that "It is imperative that the scientific issues be clarified as soon as possible, as there is much at stake." It called for more research to examine the potential health effects of RF radiation. *Microwave News, November/December, 1996*

[back] 32. The National Health and Medical Research Council of Australia announced its sponsorship of a 5 year, \$3.5 million project on potential health effects of mobile phone technology in 1996. *Microwave News, November/December, 1996*

[back] 33. The Commonwealth Scientific Industrial Research Organization (CSIRO) of Australia concluded in 1995 that the safety of cellular telephones cannot be resolved "in the near future." Dr. Stan Barnett, a principal researcher of CSIRO, states that "My goal is to establish a national committee to approach this problem by coordinating relevant and focused research." He estimated a budget of \$3 million over a 3 year period would be necessary.

*Commonwealth Scientific Industrial Research Organization, "Status of Research on Biological Effects and Safety of Electromagnetic Radiation: Telecommunications Frequencies," a report prepared by Dr. Stan Barnett, as cited in Microwave News, September/October, 1995*

[back] 34. In Canada, Expert Panels are formed in response to requests from governments and other organizations for guidance on public policy issues where specialized knowledge is required. The Royal Society of Canada (RSC) is the only national academic organization, encompassing all fields of study in the sciences, arts and humanities that provides, through its Committee on Expert

Panels, a service to Canadians by convening Expert Panels that produce publicly disseminated, arms-length, third party reviews. The most recent Expert Panel report addressing RF/MW radiation examines new data on dosimetry and exposure assessment, thermoregulation, biological effects such as enzyme induction, and toxicological effects, including genotoxicity, carcinogenicity, and testicular and reproductive outcomes. Epidemiological studies of mobile phone users and occupationally exposed populations are examined, along with human and animal studies of neurological and behavioural effects. All of the authoritative reviews completed within the last two years have supported the need for further research to clarify the possible associations between RF fields and adverse health outcomes that have appeared in some reports. See: [http://www.rsc.ca/index.php?lang\\_id=1&page\\_id=120](http://www.rsc.ca/index.php?lang_id=1&page_id=120).

*Recent Advances in Research on Radiofrequency Fields and Health: 2001-2003; A Follow-up to The Royal Society of Canada, Report on the Potential Health Risks of Radiofrequency Fields from Wireless Telecommunication Devices, 1999*

[back] 35. The European Union effort to address this issue is in the study *Risk Evaluation of Potential Environmental Hazards from Low Energy Electromagnetic Field Exposure Using Sensitive in vitro Methods* (REFLEX). Exposure to electromagnetic fields (EMF) in relation to health is a controversial topic throughout the industrial world. So far epidemiological and animal studies have generated conflicting data and thus uncertainty regarding possible adverse health effects. This situation has triggered controversies in communities especially in Europe with its high density of population and industry and the omnipresence of EMF in infrastructures and consumer products. These controversies are affecting the siting of facilities, leading people to relocate, schools to close or power lines to be re-sited, all at great expense. The European Union believes that causality between EMF exposure and disease can never be regarded as proven without knowledge and understanding of the basic mechanisms possibly triggered by EMF. To search for those basic mechanisms powerful technologies developed in toxicology and molecular biology were to be employed in the REFLEX project to investigate cellular and sub-cellular responses of living cells exposed to EMF in vitro.

The REFLEX data have made a substantial addition to the data base relating to genotoxic and phenotypic effects of both ELF-EMF and RF-EMF on *in vitro* cellular systems. While the data neither precludes nor confirms a health risk due to EMF exposure nor was the project designed for this purpose, the value lies in providing new data that will enable mechanisms of EMF effects to be studied more effectively than in the past. Furthermore, the REFLEX data provide new information that will be used for risk evaluation by WHO, IARC and ICNIRP. For further information on REFLEX see: [http://europa.eu.int/comm/research/quality-of-life/ka4/ka4\\_electromagnetic\\_en.html](http://europa.eu.int/comm/research/quality-of-life/ka4/ka4_electromagnetic_en.html)

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[back] 36. The Swedish Radiation Protections Institute (SSI) endeavors to ensure that human beings and the environment are protected from the harmful effects of radiation, both in the present and in the future. SSI has focused on epidemiological research on cancer and exposure from mobile phones and transmitters as well as experimental cancer research. In addition three selected topics were also discussed, namely blood-brain barrier, heat shock proteins, and precautionary framework. For further information on SSI see: [http://www.ssi.se/forfattning/eng\\_forfattlista.html](http://www.ssi.se/forfattning/eng_forfattlista.html)

[back] 37. In the United Kingdom, the National Radiological Protection Board (NRPB) was created by the Radiological Protection Act 1970. The statutory functions of NRPB are to advance the acquisition of knowledge about the protection of mankind from radiation hazards through research and to provide information and advice to persons (including Government Departments) with responsibilities in the United Kingdom in relation to the protection from radiation hazards either of the community as a whole or of particular sections of the community. The NRPB believes that there is a need for better occupational studies rather than simply for more. In particular, the studies need to be of occupational groups for whom measurements show that there is genuinely a substantially raised exposure to RF fields. If the studies are to be more informative than those so far, a key requirement will be for improved exposure measurement (or improved estimation of exposure) for individuals, or at least for occupational groups. It would be desirable, as far as practical, that the studies should measure the intensity and timing of RF field exposures, and also that they should include some assessment of major RF field exposures from sources other than the current occupation. Ideally, exposure assessment needs to be anatomical site (organ)-specific, because some sources result in greatly differing doses to different parts of the body. It is a difficulty in these prescriptions, of course, that the appropriate exposure metric is unknown. For further information on NRPB see: <http://www.nrpb.org/index.htm>

[back] 38. On January 5, 2005, the EMF-Team Finland issued the Helsinki Appeal 2005 to members of the European Parliament. In it physicians and researchers call on the European Parliament to apply the Precautionary Principle to electromagnetic fields, especially in the radio- and microwave- frequency bands. They criticize the present RF/MW radiation safety standards that do not recognize the biological effects caused by non-thermal exposures to non-ionizing radiation [i.e., RF/MW radiation.] They also call for continued refunding of the REFLEX EMF research program. The text of the Helsinki Appeal 2005 is found at: <http://www.emrpolicy.org/news/headlines/index.htm>

[back] 39. On July 19, 1993 Dr. Elizabeth Jacobson, Deputy Director for Science, Center for Devices and Radiological Health, Food and Drug Administration criticized Thomas Wheeler, President of the Cellular Telecommunications Industry Association:

"I am writing to let you know that we were concerned about two important aspects of your press conference of July 16 concerning the safety of cellular phones, and to ask that you carefully consider the following comments when you make future statements to the press. First, both the written press statements and your verbal comments during the conference seemed to display an unwarranted confidence that these products will be found absolutely safe. In fact, the unremittingly upbeat tone of the press packet strongly implies that there can be no hazard, leading the reader to wonder why any further research would be needed at all....More specifically, your press packet selectively quotes from our Talk Paper of February 4 in order to imply that FDA believes that cellular phones are "safe." ("There is no proof at this point that cellular phones are harmful.") In fact, the same Talk Paper also states, "There is not enough evidence to know for sure, either way." Our position, as we have stated it before, is this: Although there is no direct evidence linking cellular phones with harmful effects in humans, a few animal studies suggest that such effects could exist. It is simply too soon to assume that cellular phones are perfectly safe, or that they are hazardous--either assumption would be premature. This is precisely why more research is needed."

*Full text of letter can be found in Microwave News, July/August, 1993*

[back] 40. In 1993 the Director of the Office of Radiation and Indoor Air of the Environmental Protection Agency suggested that the FCC not adopt the 1992 ANSI/IEEE standard "due to serious flaws," among them (1) "the ANSI/IEEE conclusion that there is no scientific data indicating that certain subgroups of the population are more at risk than others is not supported by NCRP and EPA reports" and (2) "the thesis that ANSI/IEEE recommendations are protective of all mechanisms of interaction is unwarranted because the adverse effects level in the 1992 ANSI/IEEE standard are based on a thermal effect."

*Letter from Margo T. Oge, Director, Office of Radiation and Indoor Air to Thomas Stanley, Chief Engineer, Office of engineering and Technology, FCC, dated Nov 9, 1993*

[back] 41. A brief sampling of the CSIRO report:

Problems in studies of human populations published to date include imprecise estimates of exposure. As a result, such epidemiological studies may underestimate any real risk. The likelihood of epidemiological studies providing useful information is questionable, particularly if the biological end point cannot be predicted. Its value in the short term (less than 10 years) must be negligible unless there was an enormous increase in the rate of cancer growth. Interestingly, the incidence of brain tumors in the EC countries has increased substantially in recent years.

RF safety cannot be assessed in the absence of reported serious effects when so little research has been aimed at the problem. It is somewhat surprising, and

rather disappointing, to find that although the literature contains many hundreds of publications, there are very few areas of consensus....At low levels the absence of clear thresholds and [the] presence of intensity and frequency windows have created questions rather than provided answers.

There is no doubt that the interpretation of bioeffects data has been clouded by a preoccupation with thermally mediated processes. In fact, development of the ANSI/IEEE standard is based only on well-established thermal effects, and ignores the more subtle non-thermal processes that are more difficult to interpret and apply to human health.

*Commonwealth Scientific Industrial Research Organization, "Status of Research on Biological Effects and Safety of Electromagnetic Radiation: Telecommunications Frequencies," a report prepared by Dr. Stan Barnett, as cited in Microwave News, September/October, 1995*

[back] 42. Statement from the October 25-28, 1998 "Symposium of Mobile Phones and Health - Workshop on Possible Biological and Health Effects of RF Electromagnetic Fields" held at the University of Vienna, Austria.

The preferred terminology to be used in public communication: Instead of using the terms "athermal", "non-thermal" or "microthermal" effects, the term "low intensity biological effects" is more appropriate.

Preamble: The participants agreed that biological effects from low-intensity exposures are scientifically established. However, the current state of scientific consensus is inadequate to derive reliable exposure standards. The existing evidence demands an increase in the research efforts on the possible health impact and on an adequate exposure and dose assessment.

Base stations: How could satisfactory Public Participation be ensured: The public should be given timely participation in the process. This should include information on technical and exposure data as well as information on the status of the health debate. Public participation in the decision (limits, siting, etc.) should be enabled.

Cellular phones: How could the situation of the users be improved: Technical data should be made available to the users to allow comparison with respect to EMF-exposure. In order to promote prudent usage, sufficient information on the health debate should be provided. This procedure should offer opportunities for the users to manage reduction in EMF-exposure. In addition, this process could stimulate further developments of low-intensity emission devices.

[back] 43. Statement from the June 7-8, 2000 International Conference on Cell Tower Siting Linking Science and Public Health, Salzburg, Austria. The full report can be found at: [www.land-sbg.gv.at/celltower](http://www.land-sbg.gv.at/celltower)

- It is recommended that development rights for the erection and for operation of a base station should be subject to a permission procedure. The protocol should include the following aspects:
  - Information ahead and active involvement of the local public
  - ☐ Inspection of alternative locations for the siting
  - Protection of health and wellbeing
  - Considerations on conservation of land- and townscape
  - Computation and measurement of exposure
  - Considerations on existing sources of HF-EMF exposure
  - Inspection and monitoring after installation
- It is recommended that a national database be set up on a governmental level giving details of all base stations and their emissions.
- It is recommended for existing and new base stations to exploit all technical possibilities to ensure exposure is as low as achievable (ALATA-principle) and that new base stations are planned to guarantee that the exposure at places where people spend longer periods of time is as low as possible, but within the strict public health guidelines.
- Presently the assessment of biological effects of exposures from base stations in the low-dose range is difficult but indispensable for protection of public health. There is at present evidence of no threshold for adverse health effects.
  - Recommendations of specific exposure limits are prone to considerable uncertainties and should be considered preliminary. For the total of all high frequency irradiation a limit value of  $100 \text{ mW/m}^2$  ( $10 \text{ } \mu\text{W/cm}^2$ ) is recommended.
  - For preventive public health protection a preliminary guideline level for the sum total of exposures from all ELF pulse modulated high-frequency facilities such as GSM base stations of  $1 \text{ mW/m}^2$  ( $0.1 \text{ } \mu\text{W/cm}^2$ ) is recommended.

[back] 44. Scientists attending the September 13-14, 2002 International Conference "State of the Research on Electromagnetic Fields – Scientific and Legal Issues," organized by ISPESL (National Institute for Prevention and Work Safety, Italy), the University of Vienna, and the City of Catania, held in Catania, Italy, agreed to the following:

- Epidemiological and *in vivo* and *in vitro* experimental evidence demonstrates the existence for electromagnetic field (EMF) induced effects, some of which can be adverse to health.
- We take exception to arguments suggesting that weak (low intensity) EMF cannot interact with tissue.
- There are plausible mechanistic explanations for EMF-induced effects which occur below present ICNIRP and IEEE guidelines and exposure recommendations by the EU.
- The weight of evidence calls for preventive strategies based on the precautionary principle. At times the precautionary principle may involve prudent avoidance and prudent use.
- We are aware that there are gaps in knowledge on biological and physical effects, and health risks related to EMF, which require additional independent research.

[back] 45. The Freiburger Appeal is a German based appeal by mainly medical practitioners who are concerned about the effects, they believe, from mobile phone technology including masts that are appearing in their patients. It started in Oct 2002 and with very little international publicity has got 50,000 signatories with at least 2000 medical signatures from across the world. Mast These physicians and scientists agreed to establish an international scientific commission to promote research for the protection of public health from EMF and to develop the scientific basis and strategies for assessment, prevention, management and communication of risk, based on the precautionary principle.

Excerpt:

*On the basis of our daily experiences, we hold the current mobile communications technology (introduced in 1992 and since then globally extensive) and cordless digital telephones (DECT standard) to be among the fundamental triggers for this fatal development. One can no longer evade these pulsed microwaves. They heighten the risk of already-present chemical/physical influences, stress the body-immune system, and can bring the body-still-*



*functioning regulatory mechanisms to a halt. Pregnant women, children, adolescents, elderly and sick people are especially at risk.*

Statement of the physicians and researchers of Interdisziplinäre Gesellschaft für Umweltmedizin e. V. (Interdisciplinary Association for Environmental Medicine) IGUMED, Sackingen, Germany, September 19, 2002. The Freiburger Appeal can be found at: <http://www.mastsanity.org/doctors-appeals.html>.

[back] 46. Report of the European Union's REFLEX Project (Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive *in vitro* Methods), November 2004. The Project studied ELF and RF exposures to various animal cell types. The report is found at: [http://www.itis.ethz.ch/downloads/REFLEX\\_Final%20Report\\_171104.pdf](http://www.itis.ethz.ch/downloads/REFLEX_Final%20Report_171104.pdf)

From the Summary: *[t]he omnipresence of EMF's in infrastructures and consumer products have become a topic of public concern. This is due to the fear of people that based on the many conflicting research data a risk to their health cannot be excluded with some certainty. Therefore, the overall objective of REFLEX was to find out whether or not the fundamental biological processes at the cellular and molecular level support such an assumption. For this purpose, possible effects of EMF's on cellular events controlling key functions, including those involved in carcinogenesis and in the pathogenesis of neurodegenerative disorders, were studied through focused research. Failure to observe the occurrence of such key critical events in living cells after EMF exposure would have suggested that further research efforts in this field could be suspended and financial resources be reallocated to the investigation of more important issues. But as clearly demonstrated, the results of the REFLEX project show the way into the opposite direction.*

[back] 47. From the Discussion section of the December 20, 2004 Second Annual Report of Sweden's Radiation Protection Board (SSI) entitled: *Recent Research on Mobile Telephony and Health Risks: Second Annual Report from SSI's Independent Expert Group on Electromagnetic Fields*. The complete report is available at: [http://www.ssi.se/english/EMF\\_exp\\_Eng\\_2004.pdf](http://www.ssi.se/english/EMF_exp_Eng_2004.pdf)

*To date, little is known about the levels of radiofrequency radiation exposure in the general population from sources such as mobile phones being used by oneself or other people, mobile phone base stations, and radio and television transmitters. Measurements that have been performed have usually been made as a result of public concern about base station exposures or other specific sources, and have therefore been made at locations that could be assumed to have higher fields than would be the case if measurement locations were selected randomly. Furthermore, all measurements have been stationary, and there is today no knowledge about the level of exposure that an individual will have throughout the day.*

*There is need for information about the personal exposure to RF fields in the general population, to enhance the understanding of the relative importance of exposure from base stations close to the home, from radio and television transmitters, and from the use of mobile phones . . . Studies with personal RF exposure measurements of randomly selected samples of the general population are strongly encouraged.*

[back] 48. Released January 11, 2005, Mobile Phones and Health 2004: Report by the Board of NRPB Documents of the NRPB: Volume 15, No. 5. See: [http://www.nrpb.org/publications/documents\\_of\\_nrpb/abstracts/absd15-5.htm](http://www.nrpb.org/publications/documents_of_nrpb/abstracts/absd15-5.htm)

From the Executive Summary:

*The Board notes that a central recommendation in the Stewart Report was that a precautionary approach to the use of mobile phone technologies be adopted until much more detailed and scientifically robust information on any health effects becomes available.*

*The Board considers that it is important to understand the signal characteristics and field strengths arising from new telecommunications systems and related technologies, to assess the RF exposure of people, and to understand the potential biological effects on the human body.*

[back] 49. The ICNIRP exposure guidelines are only designed to protect against "known adverse health impacts," according to Dr. Jürgen Bernhardt, ICNIRP's chairman. Bernhardt reviewed the updated limits, which cover the spectrum from 1 Hz to 300 GHz, in a presentation at the 20<sup>th</sup> Annual Meeting of the Bioelectromagnetics Society in St. Pete Beach, FL, on June 10. The limits protect against "short-term, immediate health effects" such as nerve stimulation, contact shocks and thermal insults, according to the guidelines, which appear in the April issue of *Health Physics* (74, pp.494-522, 1998). Despite "suggestive" evidence that power frequency magnetic fields can be carcinogenic, ICNIRP has concluded that this and other non-thermal health effects have not been "established." ICNIRP has long followed this approach to standard-setting. In his talk, Bernhardt noted that the guidelines include "no consideration regarding prudent avoidance" for health effects for which evidence is less than conclusive.

*Microwave News, July/August 1998*

### **Additional References and Studies**

*The following references reporting biological effects of radiofrequency radiation (RFR) at low intensities through January 2005 were compiled on 12/27/04 by Henry C. Lai PhD, Research Professor of Bioengineering, University of Washington, Seattle, WA*

Balode *Sci Total Environ* 180(1):81-85, 1996 - blood cells from cows from a farm close and in front of a radar installation showed significantly higher level of severe genetic damage.

Boscol et al. *Sci Total Environ* 273(1-3):1-10, 2001 - RFR from radio transmission stations ( $0.005 \text{ mW/cm}^2$ ) affects immune system in women.

Chiang et al. *J. Bioelectricity* 8:127-131, 1989 - people who lived and worked near radio antennae and radar installations showed deficits in psychological and short-term memory tests.

de Pomerai et al. *Nature* 405:417-418, 2000. *Enzyme Microbial Tech* 30:73-79, 2002 - reported an increase in a molecular stress response in cells after exposure to a RFR at a SAR of  $0.001 \text{ W/kg}$ . This stress response is a basic biological process that is present in almost all animals - including humans.

de Pomerai et al. (*FEBS Lett* 22;543(1-3):93-97, 2003 - RFR damages proteins at  $0.015\text{-}0.020 \text{ W/kg}$ .

D'Inzeo et al. *Bioelectromagnetics* 9(4):363-372, 1988 - very low intensity RFR ( $0.002 - 0.004 \text{ mW/cm}^2$ ) affects the operation of acetylcholine-related ion-channels in cells. These channels play important roles in physiological and behavioral functions.

Dolk et al. *Am J Epidemiol* 145(1):1-9 1997- a significant increase in adult leukemias was found in residents who lived near the Sutton Coldfield television (TV) and frequency modulation (FM) radio transmitter in England.

Dutta et al. *Bioelectromagnetics* 10(2):197-202 1989 - reported an increase in calcium efflux in cells after exposure to RFR at  $0.005 \text{ W/kg}$ . Calcium is an important component of normal cellular functions.

Fesenko et al. *Bioelectrochem Bioenerg* 49(1):29-35, 1999 - reported a change in immunological functions in mice after exposure to RFR at a power density of  $0.001 \text{ mW/cm}^2$ .

Hallberg O, Johansson O, (2004) concluded that continuous disturbance of cell repair mechanisms by body-resonant FM electromagnetic fields seems to amplify the carcinogenic effects resulting from cell damage caused e.g. by UV-radiation.

Hjollund et al. *Reprod Toxicol* 11(6):897, 1997 - sperm counts of Danish military personnel, who operated mobile ground-to-air missile units that use several RFR emitting radar systems (maximal mean exposure  $0.01 \text{ mW/cm}^2$ ), were significantly lower compared to references.

Hocking et al. *Med J Aust* 165(11-12):601-605, 1996 - an association was found between increased childhood leukemia incidence and mortality and proximity to TV towers.

Ivaschuk et al. *Bioelectromagnetics* 18(3):223-229, 1999 - short-term exposure to cellular phone RFR of very low SAR ( $26 \text{ mW/kg}$ ) affected a gene related to cancer.

Kolodynski and Kolodynska, *Sci Total Environ* 180(1):87-93, 1996 - school children who lived in front of a radio station had less developed memory and attention, their reaction time was slower, and their neuromuscular apparatus endurance was decreased.

Kwee et al. *Electro- and Magnetobiology* 20: 141-152, 2001 - 20 minutes of cell phone RFR exposure at 0.0021 W/kg increased stress protein in human cells.

Lebedeva et al. *Crit Rev Biomed Eng* 28(1-2):323-337, 2000 - brain wave activation was observed in human subjects exposed to cellular phone RFR at 0.06 mW/cm<sup>2</sup>.

Magras and Xenos *Bioelectromagnetics* 18(6):455-461, 1999 - reported a decrease in reproductive function in mice exposed to RFR at power densities of 0.000168 - 0.001053 mW/cm<sup>2</sup>. Irreversible sterility was found in the fifth generation of offspring.

Mann et al. *Neuroendocrinology* 67(2):139-144, 1998 - a transient increase in blood cortisol was observed in human subjects exposed to cellular phone RFR at 0.02 mW/cm<sup>2</sup>. Cortisol is a hormone involved in stress reaction.

Marinelli et al. *J Cell Physiol.* 198(2):324-332, 2004 - exposure to 900-MHz RFR at 0.0035 W/kg affected cell's self-defense responses.

Michelozzi et al. *Epidemiology* 9 (Suppl) 354p, 1998 - leukemia mortality within 3.5 km (5,863 inhabitants) near a high power radio-transmitter in a peripheral area of Rome was higher than expected.

Michelozzi et al. *Am J Epidemiol* 155(12):1096-1103, 2002 - childhood leukemia higher at a distance up to 6 km from a radio station.

Navakatikian and Tomashevskaya "Biological Effects of Electric and Magnetic Fields, Volume 1," D.O. Carpenter (ed) Academic Press, San Diego, CA, pp.333-342. 1994 - RFR at low intensities (0.01 - 0.1 mW/cm<sup>2</sup>; 0.0027- 0.027 W/kg) induced behavioral and endocrine changes in rats. Decreases in blood concentrations of testosterone and insulin were reported.

Novoselova et al. *Bioelectrochem Bioenerg* 49(1):37-41, 1999 -low intensity RFR (0.001 mW/cm<sup>2</sup>) affects functions of the immune system.

Park et al. *International Archives of Occupational and Environmental Health* 77(6):387-394, 2004 - higher mortality rates for all cancers and leukemia in some age groups in the area near the AM radio broadcasting towers.

Persson et al. *Wireless Network* 3:455-461, 1997 - reported an increase in the permeability of the blood-brain barrier in mice exposed to RFR at 0.0004 - 0.008 W/kg. The blood-brain barrier envelops the brain and protects it from toxic substances.

Phillips et al. *Bioelectrochem. Bioenerg.* 45:103-110, 1998 - reported DNA damage in cells exposed to RFR at SAR of 0.0024 - 0.024 W/kg.

Polonga-Moraru et al. *Bioelectrochemistry* 56(1-2):223-225, 2002 - change in membrane of cells in the retina (eye) after exposure to RFR at 15  $\mu\text{W}/\text{cm}^2$ .

Pyrpasopoulou et al. *Bioelectromagnetics* 25(3):216-227, 2004 - exposure to cell phone radiation during early gestation at SAR of 0.0005 W/kg (5  $\mu\text{W}/\text{cm}^2$ ) affected kidney development in rats.

Salford et al. *Environ Health Persp Online* January 29, 2003 - Nerve cell damage in mammalian brain after exposure to microwaves from GSM mobile phones signal at 0.02 W/kg.

Santini et al. *Pathol Biol (Paris)* 50(6):369-373, 2002 - increase in complaint frequencies for tiredness, headache, sleep disturbance, discomfort, irritability, depression, loss of memory, dizziness, libido decrease, in people who lived within 300 m of mobile phone base stations.

Sarimov et al. *IEEE Trans Plasma Sci* 32:1600-1608, 2004 - GSM microwaves affect human lymphocyte chromatin similar to stress response at 0.0054 W/kg.

Schwartz et al. *Bioelectromagnetics* 11(4):349-358, 1990 - calcium movement in the heart affected by RFR at SAR of 0.00015 W/kg. Calcium is important in muscle contraction. Changes in calcium can affect heart functions.

Somogyi et al. *Scanning Microsc* 5(4):1145-1155, 1991 - RFR at 0.024 W/kg caused molecular and structural changes in cells of mouse embryos.

Stagg et al. *Bioelectromagnetics* 18(3):230-236, 1997- glioma cells exposed to cellular phone RFR at 0.0059 W/kg showed significant increases in thymidine incorporation, which may be an indication of an increase in cell division.

Stark et al. *J Pineal Res* 22(4):171-176, 1997 - a two- to seven-fold increase of salivary melatonin concentration was observed in dairy cattle exposed to RFR from a radio transmitter antenna.

Tattersall et al. *Brain Res* 904(1):43-53, 2001 - low-intensity RFR (0.0016 - 0.0044 W/kg) can modulate the function of a part of the brain called the hippocampus, in the absence of gross thermal effects. The changes in excitability may be consistent with reported behavioral effects of RFR, since the hippocampus is involved in learning and memory.

Vangelova et al. *Cent Eur J Public Health* 10(1-2):24-28, 2002 - operators of satellite station exposed to low dose (0.1127 J/kg) of RFR over a 24-hr shift showed an increased excretion of stress hormones.

Velizarov et al. *Bioelectrochem Bioenerg* 48(1):177-180, 1999 - showed a decrease in cell proliferation (division) after exposure to RFR of 0.000021 - 0.0021 W/kg.

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Veyret et al. *Bioelectromagnetics* 12(1):47-56, 1991 - low intensity RFR at SAR of 0.015 W/kg affects functions of the immune system.

Wolke et al. *Bioelectromagnetics* 17(2):144-153, 1996 - RFR at 0.001W/kg affects calcium concentration in heart muscle cells of guinea pigs.

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*The International Association of Fire Fighters recognizes IAFF Local 3368, Carpinteria-Summerland, California, who brought this issue to the attention of our membership through the Resolution 15, submitted through our biennial convention in August 2004. Additionally, the following local affiliates provided support for the passage of the resolution: Brookline, Massachusetts, San Diego, California, San Francisco, California and Vancouver, British Columbia. We also acknowledge the efforts of Dr. Henry C. Lai, University of Washington, Seattle, Washington; Dr. Magda Havas of Trent University, Peterborough, Ontario; Janet Newton, President of the EMR Policy Institute; and Susan Foster Ambrose for their technical support and continued passion to protect the health and safety of fire fighters and emergency medical personnel. Finally, we thank Dr. Leslie Plachta and the Safe Ossining Schools for their research efforts and their battle to stop siting cell towers on Ossining, New York schools.*

**ORDINANCE NO. 757-C.S.**

**AN ORDINANCE OF THE CITY OF EUREKA ADDING TO AND  
AMENDING TITLE 15 PERTAINING TO WIRELESS  
TELECOMMUNICATIONS FACILITIES**

Be It Ordained by the City Council of the City of Eureka as Follows:

**Section 1.**

The following Chapter is hereby added to Title 15:

**CHAPTER 159: WIRELESS TELECOMMUNICATIONS FACILITIES**

Section

***General Provisions***

- 159.001 Purpose
- 159.002 Findings
- 159.003 Objectives
- 159.004 Applicability
- 159.005 Definitions
- 159.006 Development standards

***Wireless telecommunication Facility Permit - Requirements & Regulations***

- 159.011 Application requirements; Fees
- 159.012 Design review
- 159.013 Action on wireless telecommunication facility permit
- 159.014 Required findings
- 159.015 Historic Resources

***Conditional Use Permit - Requirements & Regulations***

- 159.021 Application requirements; fees
- 159.022 Education/outreach
- 159.023 Noticing
- 159.024 Design review
- 159.025 Action on conditional use permit
- 159.026 Required findings
- 159.027 Lapse of permit
- 159.028 Penalties

**GENERAL PROVISIONS**

**§ 159.001 PURPOSE.**

The purpose of this chapter is to provide a uniform and comprehensive set of standards for the development and operation of wireless telecommunications facilities. The regulations contained herein are intended to protect and promote the public health, safety, community welfare and the aesthetic quality of the city while at the same time providing reasonable opportunities for providers of wireless telecommunications services to provide such services in a safe, effective and efficient manner.

**§ 159.002 FINDINGS.**

(A) *Community Benefit.* The City believes that access to wireless telecommunication is an essential service and should be made available to all persons, agencies, organizations and businesses desiring such service.

(B) *Community Welfare.* The City acknowledges that there are concerns over the exposure of people and animals to electromagnetic and radio frequency radiation. The City also acknowledges that regulations promulgated by the Federal Communications Commission limit the City's ability to regulate the electromagnetic and radio frequency radiation emitted by wireless telecommunication facilities.

**§ 159.003. OBJECTIVES**

(A) The objectives of this chapter are to:

(1) Encourage and promote the location of new wireless telecommunications facilities in areas that are not zoned for residential use.

(2) Provide for the appropriate location and development of wireless telecommunication facilities;

(3) Protect Eureka's built and natural environment by promoting compatible design standards for wireless telecommunications facilities;

(4) Minimize adverse visual impacts of wireless telecommunication facilities through careful design, siting, landscape screening, and innovative camouflaging techniques;

(5) Avoid potential damage to adjacent properties from tower or antenna failure through engineering and careful siting of wireless telecommunications tower structures and antennae;

(6) Maximize use of existing wireless telecommunication towers and alternative structures so as to minimize the need to construct new towers and minimize the total number of towers throughout the City of Eureka; and



**§ 159.004 APPLICABILITY.**

All wireless telecommunication facilities located in the City of Eureka are controlled by the provisions of this chapter. A tower or other wireless telecommunication support structure built on speculation and for which there is no wireless tenant is prohibited within city limits.

**§ 159.005 DEFINITIONS.**

**LOCAL HISTORIC DISTRICT.** An historic district listed on the City of Eureka's Local Register of Historic Places.

**NATIONAL HISTORIC DISTRICT.** An historic district listed on the National Register of Historic Places.

**PUBLIC UTILITY.** An organization that provides an essential commodity or basic service to the public, such as water, energy, transportation, or telecommunications. Utilities may be publicly or privately owned.

**SATELLITE TELECOMMUNICATION FACILITY.** Government and private facilities that transmit a variety of data through satellites, including photos of the earth, messages to and from public safety officials, and a variety of other information.

**WIRED TELECOMMUNICATION FACILITY.** Telecommunications services such as wired (landline) telephone, digital subscriber line (DSL) Internet, and cable TV and Internet services where TV, voice, Internet, data, and other content are routed over a network of wires and cables and that do not require an antenna for transmission or reception.

**WIRELESS TELECOMMUNICATION FACILITY.** Public, commercial and private electromagnetic and photoelectrical transmission, broadcast, repeater and receiving stations for radio, television, telegraph, telephone, data network, and wireless communications. **WIRELESS TELECOMMUNICATION FACILITY** includes the towers and other support structures, commercial satellite dishes, antennas, equipment buildings necessary for the specific facility, and facilities co-located on utility poles. **WIRELESS TELECOMMUNICATION FACILITY** includes **SATELLITE TELECOMMUNICATION FACILITY**. **WIRELESS TELECOMMUNICATION FACILITY** does not include **WIRED TELECOMMUNICATION FACILITY**, or private personal wireless facilities that do not require a license from the Federal Communications Commission, including Direct-to-home satellite TV.

**WIRELESS TELECOMMUNICATION FACILITY PERMIT.** An administrative permit issued by the Director of Community Development or the Planning Commission.

**§ 159.006 DEVELOPMENT STANDARDS.**

(A) *Residential Neighborhoods.* It is strongly preferred that the location of new wireless telecommunication facilities be located outside of residential neighborhoods. In an R District, all new wireless telecommunications facilities, not including collocation with an existing permitted facility, shall submit with the conditional use permit application factual information and data proving that there is no site outside the R District where the facility can be located to provide the same level of service.

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(B) *Design Standards.* All wireless telecommunication facilities are subject to the following design standards:

(1) Facilities shall be designed to be visually unobtrusive. Colors and designs should be compatible with the existing improvements on or adjacent to the site;

(2) In an R District or within 100 feet of an R District, or in the HM District within 150 feet of an R District, facilities located shall be camouflaged or of an innovative design to minimize negative visual impacts of the facility on the surrounding residential neighborhood;

(3) Screening and Landscaping:

(a) In an R, OR, or C District, or within 100 feet of an R District, or in the HM District within 150 feet of an R District, for facilities located at or near ground level screening six feet in height shall be located adjoining the facility, and an area 10 feet in depth adjoining the facility shall be landscaped with plant materials including a buffer of trees, unless the Planning Commission finds that topographic or other conditions make screening or landscaping unnecessary;

(b) In all other Districts, for facilities located at or near ground level screening six feet in height shall be located adjoining the facility including a buffer of trees, unless the Planning Commission finds that topographic or other conditions make screening unnecessary.

(c) Screening of the facility should take into account the existing improvements on or adjacent to the site, including landscaping, walls, fences, berms or other devices specifically designed to screen development;

(4) Facilities shall be sited to avoid or minimize obstruction of scenic views;

(5) Facilities shall not be of a bright, shiny or glare reflective finish;

(6) If feasible, the base station and all wires and cables necessary for the operation shall be placed underground; and

(7) If the base station is located within, or on the roof of a building, it may be placed in any location not visible from the surrounding neighborhood, with any wires and cables attached to the base station screened from public view.

(C) *Noise.*

(1) For a wireless telecommunication facility in an R district, non-transportation noise levels generated by the proposed wireless telecommunication facility, measured immediately within the property line on which the facility is located, shall not exceed the following performance standards:

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<b>Noise level descriptor</b>	<b>Daytime (7 a.m. to 10 p.m.)</b>	<b>Nighttime (10 p.m. to 7 a.m.)</b>
Hourly Leq, dB	50	45
Maximum Level, dB	70	65
<i>Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.</i>		

(2) For a wireless telecommunication facility located in an HM District within 150 feet of an R District, or in any other district within 100 feet of an R district the noise performance standards listed above shall be measured at the boundary of the R district.

(D) *Height limits.* The maximum height of all structures and accessory structures shall be as prescribed for the district in which the facility is located. The maximum height of towers and other support structures for a wireless telecommunication facility and including the maximum height of all antennas, dishes, etc shall be in accordance with the following schedule:

<b>District</b>	<b>Max height (feet)</b>	
	<b>Freestanding</b>	<b>On top of building</b>
A	100	25 feet above the height of the building, not to exceed 100 feet
RS-6000	60	25 feet above the height of the building, not to exceed 60 feet
RS-12000	60	25 feet above the height of the building, not to exceed 60 feet
RM-2500	60	25 feet above the height of the building, not to exceed 60 feet
RM-1000	60	25 feet above the height of the building, not to exceed 100 feet
OR	60	25 feet above the height of the building, not to exceed 60 feet
HM	60	25 feet above the height of the building, not to exceed 100 feet
CN	60	25 feet above the height of the building, not to exceed 60 feet
CP	60	25 feet above the height of the building, not to exceed 100 feet
CC	60	25 feet above the height of the building, not to exceed 100 feet
CW	60	25 feet above the height of the building, not to exceed 60 feet
CS	100	25 feet above the height of the building, not to exceed 100 feet
ML	100	25 feet above the height of the building, not to exceed 100 feet
MG	150	25 feet above the height of the building, not to exceed 150 feet
MC	150	25 feet above the height of the building, not to exceed 150 feet
P	100	25 feet above the height of the building, not to exceed 100 feet

(E) *Minimum yards.* The minimum yards for all structures and accessory structures shall be as prescribed for the district in which the facility is located. The minimum yards for free standing towers and other freestanding support structures for a wireless telecommunication facility shall be in accordance with the following schedule:

<b>District</b>	<b>Min yards (feet)</b>					
	<b>Within 100 feet of an R district</b>			<b>More than 100 feet from an R district</b>		
	<b>front</b>	<b>side</b>	<b>rear</b>	<b>front</b>	<b>side</b>	<b>rear</b>
A	30	30	30	30	30	30
RS-6000	25	25	25	-	-	-
RS-12000	25	25	25	-	-	-

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<b>District</b>	<b>Min yards (feet)</b>					
	<b>Within 100 feet of an R district</b>			<b>More than 100 feet from an R district</b>		
	<b>front</b>	<b>side</b>	<b>rear</b>	<b>front</b>	<b>side</b>	<b>rear</b>
RM-2500	20	20	20	-	-	-
RM-1000	20	20	20	-	-	-
OR	20	20	20	-	-	-
HM	20*	20*	20*	0*	0*	0*
CN	20	20	20	5	5	5
CP	50	50	50	50	50	50
CC	20	20	20	5	5	5
CW	20	20	20	5	5	5
CS	20	20	20	0	0	0
ML	20	20	20	0	0	0
MG	20	20	20	0	0	0
MC	20	20	20	0	0	0
P	20	20	20	0	0	0

\* in the HM district the distance from an R district is measured at 150 feet not 100 feet.

(F) *Utility poles.* Co-location of wireless telecommunication facility antennas on utility poles shall be subject to the same permit requirements for all other wireless telecommunication facilities, and shall be subject to the following standards:

(1) The utility pole shall be located in a public right-of-way or in a utility easement and subject to any applicable franchise fees or lease agreements required by the city;

(2) The antenna(s) shall not extend more than ten feet above the top of the utility pole;

(3) If the utility pole must be replaced to accommodate the antenna(s), the replacement pole shall not be more than 10 feet higher than the existing utility pole. If the replacement pole exceeds the height of the existing pole, the antenna(s) shall be mounted to the sides of the pole and shall not extend above the top of the replacement pole. Replacement of a utility pole shall be subject to a conditional use permit;

(4) Antenna(s) including the mounting structure with an outside diameter between 24 inches and 36 inches shall be subject to a conditional use permit;

(5) Antenna(s) including the mounting structure with an outside diameter greater than 36 inches are not permitted on utility poles;

(6) If the antenna(s) and mounting structure are narrower than the top of the utility pole, stealth shielding of the antenna(s) shall be used to make the antenna(s) appear as a vertical extension of the utility pole;

(7) Electrical equipment shall either be attached directly to the utility pole or placed underground. If the electrical equipment is attached to the pole, the box(es) shall not be

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larger than 36 inches in height, 12 inches deep and no wider than 20 inches. Not more than 5 such boxes shall be mounted on any one utility pole (excluding the power meter and network interface box). The boxes shall be stacked vertically, one above the other, and shall be at least 10 feet above the ground. The power meter and network interface box may be installed below the 10 foot level;

(8) Antenna(s) and electrical boxes shall be painted to match the utility pole to minimize visual impact;

(9) Generators or noise producing venting systems shall not be permitted;

(10) Lighting for aircraft is prohibited except where required by federal law;

(11) Electrical and utility cables between the utility pole and electrical boxes shall be placed underground;

(12) Prior to co-location the utility pole shall be certified by the utility company or an independent structural engineer as being structurally capable of supporting the existing and proposed equipment; and

(13) If the wired utilities using the pole are relocated or placed underground, the telecommunications antennae and equipment shall be relocated so that the utility pole can be removed at the same time as adjoining poles.

(G) *Maintenance.* All wireless telecommunication facilities shall be maintained in a neat and orderly manner on a regular and as-needed basis. Maintenance shall include but not be limited to the following:

(1) Mowing, weeding, gardening and general maintenance of landscaping, and including replacement of diseased or dying plant material;

(2) Painting;

(3) Removal of debris, garbage and waste; and

(4) Graffiti removal.

(H) *Removal.* Wireless telecommunication towers or support structures shall be demolished, deconstructed or otherwise removed upon abandonment or termination of use, and all debris shall be recycled and/or disposed of in an appropriate manner. Removal shall be completed within 90 days of abandonment or termination of use. Upon notification by the city to the property owner that the tower or support structure appears abandoned, the property owner shall remove the tower or support structure within 90 days, or the property owner shall provide satisfactory evidence to the city that the tower or support structure has not been abandoned. Expenses incurred to demolish, deconstruct or otherwise remove wireless communication towers or support structures shall be fully paid by the company owning the tower or support structure and/or the property owner where the tower or support structure is located.

Nothing in this provision shall have the effect nor shall it be construed to interfere with private contracts for facility uses in existence at the time of adoption of this ordinance.

***WIRELESS TELECOMMUNICATION FACILITY PERMIT -  
REQUIREMENTS & REGULATIONS***

**§ 159.011 APPLICATION REQUIREMENTS; FEES.**

(A) Except as provided in this chapter, all wireless telecommunication facilities shall require a wireless telecommunication facility permit.

(B) All wireless telecommunication facilities shall be co-located with existing facilities, unless it is determined that co-location is not feasible.

(C) An application for a wireless telecommunication facility permit shall include the following:

(1) All application materials otherwise required for design review as prescribed in the Eureka Municipal Code;

(2) Scaled photo simulations, elevations and other visual or graphic illustrations necessary to determine the visual compatibility of the proposed project, including all equipment and antennae associated with future co-located telecommunications, with the general character, aesthetics, scenic qualities, and existing development in the surrounding neighborhood;

(3) A landscape plan that shows existing vegetation, vegetation to be removed and proposed landscaping by type, size and location with the expectation that maturity will occur in three to five years;

(4) A geographic service area map showing:

(a) The applicant's existing and anticipated future wireless telecommunications network within 3 miles in all directions of the proposed wireless telecommunication facility;

(b) The handoff sites within the area described in (a) above;

(c) The geographic area of the "cell" in which the proposed wireless telecommunication facility could be located to provide the new or expanded wireless service;

(d) All other existing facilities that could be used for co-location within 3 miles in all directions of the proposed wireless telecommunication facility;

(5) If the proposed wireless telecommunication facility will not be co-located with an existing approved facility, written justification why co-location is not feasible shall be submitted. Feasibility shall include the following:

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(a) Whether there are any existing facilities within the geographic area of the cell required for the proposed wireless telecommunication facility;

(b) If there are existing facilities within the geographic area of the cell for the proposed wireless telecommunication facility, feasibility shall consider whether:

(i) The existing facility(ies) is of sufficient height to meet the needs of the proposed wireless telecommunication facility;

(ii) The existing tower(s) or support structure(s) have sufficient structural strength to support the proposed new wireless telecommunication antennas or antenna arrays and related equipment;

(iii) There is adequate vertical and horizontal distance available on the existing tower(s) or support structure(s) to accommodate the proposed wireless telecommunication antennas or antenna arrays and related equipment;

(iv) The proposed wireless telecommunication facility would cause adverse electromagnetic interference with the existing facility(ies);

(v) There is adequate site area and/or building floor area at the existing facility(ies) to accommodate the proposed wireless telecommunications ground equipment; and

(vi) The owner of the existing facility(ies) will consent to co-location.

(6) A Federal Communications Commission TOWAIR Determination that the antenna structure does not require registration, or an aircraft and airport safety analysis providing a copy of the Federal Aviation Administration approval letter that the project conforms to Federal Aviation Administration regulations (*Form FAA 7460-1 "Notice of Proposed Construction or Alteration" and the "Determination of No Hazard to Air Navigation"*) and including specific safety requirements such as lighting, facility color, etc.;

(7) A structural analysis prepared by a qualified California licensed civil engineer showing that the proposed wireless telecommunication facility meets manufacturer's specifications and the requirements of the state's building code contained in Title 24 of the California Administrative Code, as may be amended from time to time, relating to structural design, wind, ice and snow loads;

(8) A public health report, prepared by a qualified radio frequency engineer written in plain English and in conformance with the Federal Communications Commission OET 65. The public health report shall state the maximum electromagnetic and radio frequency radiation to be emitted by the proposed facility and whether those emissions conform to safety standards adopted by the Federal Communications Commission. The public health report shall include the cumulative analysis of the electromagnetic and radio frequency radiation of all other existing and anticipated future wireless telecommunication facilities within 2,000 feet of the proposed facility;

(9) Noise and acoustical information for non-transportation noise sources, including the base transceiver station(s), equipment building(s) and associated equipment, such as cooling equipment and back-up generator(s) showing compliance with the development standards of section 159.006(A);

(10) Application fees as established by Resolution of the City Council.

**§ 159.012 DESIGN REVIEW**

(A) All wireless telecommunications facilities shall be subject to site plan and architectural review as prescribed in Chapters 155 and 156.

(B) The Design Review Committee may adopt pre-approved designs for wireless telecommunications facilities. For proposed wireless telecommunication facilities that use pre-approved designs the site plan or architectural review required by Chapters 155 and 156 may be approved by the Director of Community Development.

**§ 159.013 ACTION ON WIRELESS TELECOMMUNICATION FACILITY PERMIT.**

(A) Action to approve or deny a wireless telecommunication facility permit shall be taken by the Director of Community Development. The action of the Director on the wireless telecommunication facility permit shall be after design review as prescribed in section 159.012 of this chapter.

(B) The Director of Community Development may at his or her discretion refer the wireless telecommunication facility permit to the Planning Commission for action.

**§ 159.014 REQUIRED FINDINGS.**

(A) A wireless telecommunication facility permit may be granted only if the following findings are made:

(1) The proposed wireless telecommunication facility will not generate electromagnetic or radio frequency radiation in excess of the Federal Communications Commission adopted standards for human exposure; and

(2) The proposed wireless telecommunication facility will be compatible with the general character, aesthetics, scenic qualities, and existing development in the surrounding neighborhood.

**§ 159.015 HISTORIC RESOURCES.**

In addition to the wireless telecommunication facility permit, all wireless telecommunications facilities located within a Local or National Historic District or within 100' of a Local or National Historic District shall require a conditional use permit as prescribed in this chapter.



***CONDITIONAL USE PERMIT - REQUIREMENTS & REGULATIONS***

**§ 159.021 APPLICATION REQUIREMENTS; FEES.**

(A) Where a wireless telecommunication facility requires a conditional use permit, the conditional use permit shall also act as the wireless telecommunication facility permit otherwise required by this chapter.

(B) An application for a conditional use permit for a wireless telecommunication facility shall include the following:

(1) All application materials otherwise required for a conditional use permit pursuant to the Eureka Municipal Code;

(2) All materials listed as required for a wireless telecommunications facility permit application as prescribed in this chapter;

(3) In an R District, all new wireless telecommunications facilities, not including collocation with an existing permitted facility, factual information and data proving that there is no site outside the R District where the facility can be located to provide the same level of service; and

(4) Application fees as established by Resolution of the City Council.

(C) In addition to the conditional use permit a wireless telecommunication facility located in the coastal zone shall only be allowed upon the granting of a coastal development permit as required pursuant to the Eureka Municipal Code.

**§ 159.022 EDUCATION OUTREACH.**

(A) Within 60 days of submittal of a complete application for a conditional use permit to locate a wireless telecommunication facility in an R district, or in an HM District within 150 feet of an R District, or in any other district within 100 feet of an R district, the applicant shall host a neighborhood education and informational meeting at which, at a minimum, a summary of the information provided with the conditional use permit application shall be presented and made available to attendees in electronic and/or hard copy.

(B) The education and informational meeting shall be noticed by the applicant in conformance with section 159.023 of this chapter. The notice shall be printed on brightly-colored (preferably florescent) heavy stock post cards. Additionally, a sign of a minimum size of two-and-a-half feet tall by three feet wide of a visible color other than yellow advertising the education and informational meeting shall be posted in a conspicuous place on or near the location of the proposed wireless telecommunication facility. The sign shall state the date, time and location of the education and informational meeting, the location of the proposed wireless telecommunication facility, and a contact phone number of the applicant or agent.

(C) The applicant shall prepare and submit to the Community Development Department within 21 days of the education and informational meeting, at a minimum, the

following:

- (1) A copy of the information presented and made available (in all formats) by the applicant at the meeting;
- (2) A summary of the issues and concerns, if any, that were presented either verbally or in writing at the meeting along with proposed mitigation to address them;
- (3) A copy of all written correspondence received at the meeting;
- (4) Information and/or documentation prepared by the applicant addressing each of the issues and/or concerns, if any, expressed at the meeting; and
- (5) A list of names and email addresses of persons requesting to receive notice of the public hearing for the conditional use permit.

**§ 159.023 NOTICING.**

(A) All noticing for hearings on a conditional use permit application for a wireless telecommunications facility shall be as otherwise required for a conditional use permit pursuant to the Eureka Municipal Code;

(B) For a proposed wireless telecommunication facility greater than 60 feet in height in an R district, or in an HM District within 150 feet of an R District, or in any other district within 100 feet of an R district, notice shall also be provided to all owners and tenants of real property within 500 feet of the site proposed for the wireless telecommunication facility.

**§ 159.024 DESIGN REVIEW.**

(A) All wireless telecommunications facilities shall be subject to site plan and architectural review.

(B) No conditional use permit for a wireless telecommunications facility shall be approved until the site plan and architectural review required by this chapter are approved by the Planning Commission.

**§ 159.025 ACTION ON CONDITIONAL USE PERMIT.**

All conditional use permits for a wireless telecommunication facility shall be acted upon as otherwise required for a conditional use permit pursuant to the Eureka Municipal Code.

**§ 159.026 REQUIRED FINDINGS.**

(A) A conditional use permit for a wireless telecommunication facility may be granted only if the following findings are made:

- (1) All findings otherwise required for a conditional use permit pursuant to the Eureka Municipal Code; and
- (2) All findings required for a wireless telecommunication facility permit as

prescribed in section 159.014 of this chapter.

**§ 159.027 LAPSE OF PERMIT.**

Lapse of a conditional use permit for a wireless telecommunications facility shall be the same as the lapse of all other conditional use permits as prescribed in the Eureka Municipal Code.

**§ 159.028 PENALTIES.**

(A) It shall be unlawful for any person to violate any provision or to fail to comply with any of the requirements of this code or the provisions of any code adopted by reference by this code. Any person violating any of such provisions or failing to comply with any of the mandatory requirements of this code shall be guilty of a misdemeanor. Any person convicted of a misdemeanor under the provisions of this code shall be punishable by a fine of not more than \$1,000 or by imprisonment in the county jail for a period not exceeding six months, or by both such fine and imprisonment. Each such person shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of this code, or the provisions of any code adopted by reference by this code, is committed, continued, or permitted by such person and shall be punishable accordingly. Any violation of this code which is declared to be a misdemeanor shall be considered and treated as an infraction subject to the procedures described in Cal. Penal Code §§ 19.6 and 19.7, when:

(1) The City Attorney files a complaint charging the offense as an infraction unless the defendant, at the time he is arraigned, after being informed of his rights, elects to have the case proceed as a misdemeanor; or

(2) The court, with the consent of the defendant, determines that the offense is an infraction in which event the case shall proceed as if the defendant had been arraigned on an infraction complaint.

(B) In addition to the penalties provided by this section, any condition caused or permitted to exist in violation of any of the provisions of this code, or the provisions of any code adopted by reference by this code, shall be deemed a public nuisance and may be summarily abated by this city, and each day such condition continues shall be regarded as a new and separate offense.

Section 2.

Title 15, Chapter 155, Section 155.006, is hereby amended to read as follows:

**§ 155.006 DEFINITIONS.**

**PUBLIC UTILITY.** An organization which provides an essential commodity or basic service to the public, such as water, energy, transportation, or telecommunications. Utilities may be publicly or privately owned.

**SATELLITE TELECOMMUNICATION FACILITY.** Government and private facilities that transmit a variety of data through satellites, including photos of the earth, messages to and from public safety officials, and a variety of other information.

**WIRED TELECOMMUNICATION FACILITY.** Telecommunications services such as wired (landline) telephone, digital subscriber line (DSL) Internet, and cable TV and Internet services where TV, voice, Internet, data, and other content are routed over a network of wires and cables and that do not require an antenna for transmission or reception.

**WIRELESS TELECOMMUNICATION FACILITY.** Public, commercial and private electromagnetic and photoelectrical transmission, broadcast, repeater and receiving stations for radio, television, telegraph, telephone, data network, and wireless communications. **WIRELESS TELECOMMUNICATION FACILITY** includes the towers and other support structures, commercial satellite dishes, antennas, equipment buildings necessary for the specific facility, and facilities co-located on utility poles. **WIRELESS TELECOMMUNICATION FACILITY** includes **SATELLITE TELECOMMUNICATION FACILITY**. **WIRELESS TELECOMMUNICATION FACILITY** does not include **WIRED TELECOMMUNICATION FACILITY**, or private personal wireless facilities that do not require a license from the Federal Communications Commission, including Direct-to-home satellite TV.

**WIRELESS TELECOMMUNICATION FACILITY PERMIT.** An administrative permit issued by the Director of Community Development or the Planning Commission.

Section 3.

Title 15, Chapter 155, Section 155.033, is hereby amended to read as follows:

**§ 155.033 HEIGHT LIMITS.**

(B) *Exceptions.* Towers, spires, cupolas, chimneys, penthouses, water tanks, flagpoles, monuments, scenery lofts, transmission towers for wired telecommunications, fire towers, and similar structures and necessary mechanical appurtenances covering not more than 10% of the ground area covered by the structure may be erected to a height of not more than 100 feet or not more than 25 feet above the height limit prescribed by the regulations for the district in which the site is located, whichever is less. The height of wireless telecommunication facilities shall be regulated by Chapter 159.

Section 4.

Title 15, Chapter 155, Section 155.051, is hereby amended to read as follows:

**§ 155.051 A AGRICULTURAL DISTRICTS.**

(D) *Conditional uses.* The following uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this chapter:

- (24) Veterinarians' offices;
- (25) Accessory structures and uses located on the same site as a conditional use; and
- (26) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 5.

Title 15, Chapter 155, Section 155.052, is hereby amended to read as follows:

**§ 155.052 RS-6,000 ONE-FAMILY RESIDENTIAL DISTRICTS.**

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this chapter:

- (13) "Bed and breakfast inn" in which not more than 15 paying guests may be lodged or boarded, provided that the site of such inn shall not be less than one acre in area;
- (14) Timber harvest of less than three acres; and
- (15) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 6.

Title 15, Chapter 155, Section 155.053, is hereby amended to read as follows:

**§ 155.053 RM MULTI-FAMILY RESIDENTIAL DISTRICTS.**

(F) *Conditional uses.* The following conditional uses shall be permitted in the RM-2,500 and RM-1,000 Districts upon the granting of a use permit in accordance with the provisions of §§ 155.280 through 155.299 of this chapter:

- (14) Family care homes and halfway houses;
- (15) Timber harvest of less than three acres; and
- (16) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 7.

Title 15, Chapter 155, Section 155.054, is hereby amended to read as follows:

**§ 155.054 OR OFFICE AND MULTI-FAMILY RESIDENTIAL DISTRICTS.**

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this chapter:

(13) Timber harvest of less than three acres; and

(14) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 8.

Title 15, Chapter 155, Section 155.055, is hereby amended to read as follows:

**§ 155.055 HM HOSPITAL-MEDICAL DISTRICTS.**

(C) *Permitted uses.* The following uses shall be permitted:

(6) Parking facilities, including fee parking facilities improved in conformity with the standards prescribed for required parking facilities in § 155.118 of this chapter;

(7) Accessory structures and uses located on the same site as a permitted use; and

(8) Wireless telecommunication facilities located more than 150' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this chapter:

(6) Any use permitted in § 155.053(E) of this chapter in "RM" Districts, subject to all the requirements of the "RM 1,000" District. "HM" District regulations shall control where they impose greater restrictions;

(7) Timber harvest of less than three acres; and

(8) Wireless telecommunication facilities located within 150' of an R District subject to the provisions of Chapter 159.

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Section 9.

Title 15, Chapter 155, Section 155.56, is hereby amended to read as follows:

**§ 155.056 P PUBLIC DISTRICTS.**

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this chapter:

(8) Public pumping stations, power stations, equipment buildings and installations, corporation yards, drainage ways and structures, reservoirs, storage tanks, and sewage treatment plants;

(9) Required off-street parking facilities located on a site separated from the use which the facilities serve, as prescribed by § 155.119(B) of this chapter; and

(10) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 10.

Title 15, Chapter 155, Section 155.078, is hereby amended to read as follows:

**§ 155.078 PERMITTED AND CONDITIONAL USES.**

(A) The following uses shall be permitted uses or conditional uses in a C District provided the symbol P, for permitted uses, or C, for conditional uses which appears in the column beneath of C District:

<b>USES</b>	<b>CN</b>	<b>CP</b>	<b>CC</b>	<b>CS</b>
Radio and television broadcasting studios; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159.			P	P
Wireless telecommunication facilities located within 100' of an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.	C	C	C	C
Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.	P	P	P	P
Telegraph offices ; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific	P	P	P	P

<i><b>USES</b></i>	<i><b>CN</b></i>	<i><b>CP</b></i>	<i><b>CC</b></i>	<i><b>CS</b></i>
facility are subject to the provisions of Chapter 159.				

Section 11.

Title 15, Chapter 155, Section 155.098. is hereby amended to read as follows:

**§ 155.098 PERMITTED USES.**

The following uses shall be permitted:

(A) *ML Limited Industrial Districts.*

(5) Parking lots improved in conformity with the standards prescribed for required parking facilities in § 155.118 of this chapter;

(6) Accessory structures and uses located on the same site as a permitted use;

(7) Emergency shelters pursuant to the requirements and regulations contained in § 155.040 of this chapter; and,

(8) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

Section 12.

Title 15, Chapter 155, Section 155.099, is hereby amended to read as follows:

**§ 155.099 CONDITIONAL USES.**

The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this chapter, and the Planning Commission may require the submission of reports by technical consultants or other evidence in addition to the data prescribed in § 155.281 of this chapter:

(A) *ML Limited Industrial Districts.*

(7) Gymnastics schools, and health clubs;

(8) Live-work uses, only where the combining zone, LW has been applied to the Limited Industrial Zoning District; and,

(9) Wireless telecommunication facilities located within 100' of an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(B) *MG General Industrial Districts.*



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- (rr) Storage of logs or wood chips;
- (2) Accessory structures and uses located on the same site as a conditional use; and
- (3) Wireless telecommunication facilities located within 100' of an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159,

Section 13.

Title 15, Chapter 156, Section 156.006, is hereby amended to read as follows:

**§ 156.006 DEFINITIONS.** *add the following*

***PUBLIC UTILITY.*** An organization which provides an essential commodity or basic service to the public, such as water, energy, transportation, or telecommunications. Utilities may be publicly or privately owned.

***SATELLITE TELECOMMUNICATION FACILITY.*** Government and private facilities that transmit a variety of data through satellites, including photos of the earth, messages to and from public safety officials, and a variety of other information.

***WIRED TELECOMMUNICATION FACILITY.*** Telecommunications services such as wired (landline) telephone, digital subscriber line (DSL) Internet, and cable TV and Internet services where TV, voice, Internet, data, and other content are routed over a network of wires and cables and that do not require an antenna for transmission or reception.

***WIRELESS TELECOMMUNICATION FACILITY.*** Public, commercial and private electromagnetic and photoelectrical transmission, broadcast, repeater and receiving stations for radio, television, telegraph, telephone, data network, and wireless communications. ***WIRELESS TELECOMMUNICATION FACILITY*** includes the towers and other support structures, commercial satellite dishes, antennas, equipment buildings necessary for the specific facility, and facilities co-located on utility poles. ***WIRELESS TELECOMMUNICATION FACILITY*** includes ***SATELLITE TELECOMMUNICATION FACILITY.*** ***WIRELESS TELECOMMUNICATION FACILITY*** does not include ***WIRED TELECOMMUNICATION FACILITY***, or private personal wireless facilities that do not require a license from the Federal Communications Commission, including Direct-to-home satellite TV.

***WIRELESS TELECOMMUNICATION FACILITY PERMIT.*** An administrative permit issued by the Director of Community Development or the Planning Commission.

Section 14.

Title 15, Chapter 156, Section 156.037, is hereby amended to read as follows:

**§ 156.037 HEIGHT LIMITS.**

(B) *Exceptions.* Towers, spires, cupolas, chimneys penthouses, water tanks, flagpoles, monuments, scenery lofts, transmission towers for wired telecommunications, fire towers, and similar structures and necessary mechanical appurtenances covering not more than 10% of the ground area covered by the structure may be erected to a height of not more than 100 feet or not more than 25 feet above the height limit prescribed by the regulations for the district in which the site is located, whichever is less. The height of wireless telecommunication facilities shall be regulated by Chapter 159.

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Section 15.

Title 15, Chapter 156, Section 156.068, is hereby amended to read as follows:

**§ 156.068 AC — COASTAL AGRICULTURAL DISTRICT.**

(D) *Conditional uses.* The following uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(5) Wetland restoration and enhancement projects, and

(6) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 16.

Title 15, Chapter 156, Section 156.069, is hereby amended to read as follows:

**§ 156.069 RS — ONE-FAMILY RESIDENTIAL DISTRICTS.**

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(13) Bed and breakfast inns in which not more than 15 paying transient guests may be lodged or boarded, provided that the site of such inn shall not be less than one acre in area;

(14) Timber harvest of less than three acres; and

(15) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 17.

Title 15, Chapter 156, Section 156.070, is hereby amended to read as follows:

**§ 156.070 RM — MULTI-FAMILY RESIDENTIAL DISTRICTS.**

(C) *Conditional uses.* The following conditional uses shall be permitted in the RM-2,500 and RM-1,000 Districts upon the granting of a use permit in accordance with the provisions of §§ 155.280 through 155.299 of this title:

(13) Timber harvest of less than three acres; and

(14) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 18.

Title 15, Chapter 156, Section 156.071, is hereby amended to read as follows:

**§ 156.071 OR — OFFICE AND MULTI-FAMILY RESIDENTIAL DISTRICTS.**

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(12) Retail and service establishments that are compatible with and complementary to other permitted uses, including only:

(o) Telegraph offices; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159; and,

(13) Timber harvest of less than three acres; and

(14) Wireless telecommunication facilities subject to the provisions of Chapter 159.

Section 19.

Title 15, Chapter 156, Section 156.072, is hereby amended to read as follows:

**§ 156.072 CW — WATERFRONT COMMERCIAL DISTRICTS.**

(C) *Permitted uses.* The following uses shall be permitted in the CW Waterfront Commercial District, provided that when recreation and visitor-serving facilities are integrated with coastal-dependent uses (noted below with an asterisk), the recreation and visitor-serving areas shall be secondary to and compatible with the coastal-dependent uses:

(11) Coastal dependent and coastal-related uses; and

(12) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.*

(1) The following conditional uses shall be permitted in the CW Waterfront Commercial District upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title. The applicant shall demonstrate and the city shall find that granting of a use permit will not diminish recreational or visitor-serving opportunities.

(iii) Radio and television broadcasting studios; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

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(vvv) Telegraph offices; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

(eeee) Public utility service pumping stations, power stations, equipment buildings and installations, drainageways and structures, storage tanks, and transmission lines found by the Planning Commission to be necessary for the public health, safety or welfare; and

(ffff) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

**Section 20.**

Title 15, Chapter 156, Section 156.073, is hereby amended to read as follows:

**§ 156.073 CN — NEIGHBORHOOD COMMERCIAL DISTRICTS.**

(C) *Permitted uses.* The following uses shall be permitted:

(84) Telegraph offices; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

(93) Women's apparel accessory stores; and

(94) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(11) Service stations, not including automobile, truck, and trailer rentals as accessory uses, provided all operations, except the sale of gasoline and oil and the washing of cars, shall be conducted within a building enclosed on at least three sides; and

(12) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

**Section 21.**

Title 15, Chapter 156, Section 156.074, is hereby amended to read as follows:

**§ 156.074 CS — SERVICE COMMERCIAL DISTRICT.**

(C) *Permitted uses.* The following uses shall be permitted:

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(143) Radio and television broadcasting studios; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

(176) Telegraph offices; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

(197) Women's apparel accessory stores; and

(198) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(20) Veterinarians' offices and small animal hospitals, including operations not conducted within a completely enclosed building, not less than 300 feet from an R or OD District; and

(21) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

**Section 22.**

Title 15, Chapter 156, Section 156.075, is hereby amended to read as follows:

**§ 156.075 CP — PLANNED SHOPPING CENTER COMMERCIAL DISTRICTS.**

(C) *Permitted uses.* The following uses shall be permitted in the CP Planned Shopping Center Commercial District:

(77) Radio and television broadcasting studios; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

(95) Telegraph offices; towers and other support structures, commercial satellite dishes, antennas, and equipment buildings necessary for the specific facility are subject to the provisions of Chapter 159;

(107) Women's apparel accessory stores; and

(108) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.* The following conditional uses shall be permitted in accord with the provisions of §§ 155.280 through 155.299 of this title:

(11) Service stations, including automobile, truck, and trailer rentals as accessory uses only;

(12) Service stations, not including automobile, truck, and trailer rentals as accessory uses, provided that all operations, except the sale of gasoline and oil and the washing of cars, shall be conducted within a building enclosed on at least three sides; and

(13) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

**Section 23.**

Title 15, Chapter 156, Section 156.076, is hereby amended to read as follows:

**§ 156.076 MC — COASTAL DEPENDENT INDUSTRIAL DISTRICTS.**

(C) *Permitted uses.* The following uses shall be permitted:

(8) Water borne carrier import and export facilities; and

(9) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.*

(1) The following conditional uses shall be permitted in accord with the provisions of §§ 155.280 through 155.299 of this chapter:

(k) Warehouses serving permitted uses;

(l) Commercial uses incidental to the primary coastal dependent industrial use (within the Core Coastal-Dependent Industrial Area); and

(m) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

**Section 24.**

Title 15, Chapter 156, Section 156.077, is hereby amended to read as follows:

**§ 156.077 ML — LIMITED INDUSTRIAL DISTRICTS.**

(C) *Permitted uses.*

(49) Accessory structures and uses located on the same site as a permitted use;

**ORDINANCE No. 757-C.S.**

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(50) Emergency shelters pursuant to the requirements and regulations contained in § 156.041 of this chapter; and

(51) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.*

(1) The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(g) Gymnastics schools and health clubs; and

(h) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

Section 25.

Title 15, Chapter 156, Section 156.078, is hereby amended to read as follows:

**§ 156.078 MG — GENERAL INDUSTRIAL DISTRICTS.**

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:

(44) Accessory structures and uses located on the same site as a conditional use; and

(45) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

Section 26.

Title 15, Chapter 156, Section 156.079, is hereby amended to read as follows:

**§ 156.079 P — PUBLIC DISTRICTS.**

(C) *Permitted uses.* Each use and structure existing in a P District as of the adoption date of these regulations is hereby declared to be a conforming use and structure.

(19) Uses which are accessory and incidental to a permitted use; and

(20) Wireless telecommunication facilities located more than 100' from an R District subject to a wireless telecommunication facility permit issued pursuant to Chapter 159.

(D) *Conditional uses.* The following conditional uses shall be permitted upon the granting of a use permit in accord with the provisions of §§ 155.280 through 155.299 of this title:



**ORDINANCE No. 757-C.S.**

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(3) Storage or processing of materials or equipment accessory to other permitted or conditional uses; and

(4) Wireless telecommunication facilities located within 100' of an R District subject to the provisions of Chapter 159.

Section 27.

Title 15, Chapter 156, Section 156.080, is hereby amended to read as follows:

**§ 156.080 PF/M — PUBLIC FACILITY/MARINA.**

(C) *Conditional uses.* A third restaurant, on-site incidental fish sales and processing, and wireless telecommunication facilities subject to the provisions of Chapter 159 shall be conditionally permitted, provided such uses do not displace current or projected demand for permitted uses and necessary support facilities, including parking. Conditional uses shall be designed and located so as not to interfere with permitted uses.

**ORDINANCE NO. 757-C.S.**

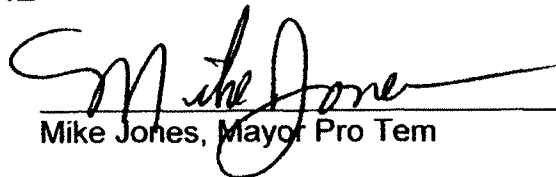
Page 28

Section 29.

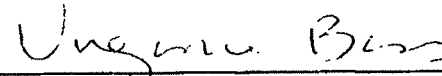
This ordinance becomes effective thirty (30) days after the date of its enactment.

PASSED, APPROVED AND ADOPTED by the City Council of the City of Eureka in the County of Humboldt, State of California, on the 19th day of October, 2010 by the following vote:

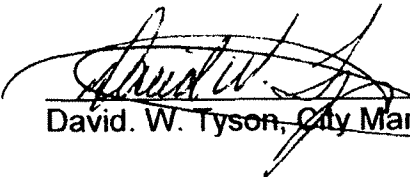
AYES: COUNCIL MEMBERS: GLASS, ATKINS, LEONARD, JONES  
NOES: COUNCIL MEMBERS: NONE  
ABSENT: COUNCIL MEMBERS: JAGER  
ABSTAIN: COUNCIL MEMBERS: NONE

  
Mike Jones, Mayor Pro Tem

THE ABOVE ORDINANCE WAS SUBMITTED TO THE MAYOR on the 26th day of October, 2010, and hereby approved.

  
Virginia Bass, Mayor


*Approved as to Administration:*

  
David W. Tyson, City Manager

*Approved as to form:*

  
William Bragg, Interim City Attorney

THE ABOVE ORDINANCE WAS ATTESTED BY THE CITY CLERK OF THE CITY OF EUREKA on the 29th day of October, 2010

  
Pamela J. Powell, City Clerk

**Boca Raton, Florida, Code of Ordinances >> - VOLUME II >> Chapter 28 - ZONING >> ARTICLE XV. -  
SUPPLEMENTARY DISTRICT REGULATIONS >> DIVISION 13. - WIRELESS COMMUNICATIONS  
FACILITIES >>**

**DIVISION 13. - WIRELESS COMMUNICATIONS FACILITIES**

[178]

- Sec. 28-1622. - Intent.  
Sec. 28-1623. - Applicability.  
Sec. 28-1624. - General rules of interpretation and definitions.  
Sec. 28-1625. - Application requirements and standards for wireless communications facilities excluding collocations (as provided in section 28-1326).  
Sec. 28-1626. - Application requirements and standards for collocations.  
Sec. 28-1627. - Installations on municipal property.  
Sec. 28-1628. - Application fees, development standards and process.  
Sec. 28-1629. - Collocation.  
Sec. 28-1630. - Interference with public safety communications.  
Sec. 28-1631. - Development, zoning, building, and inspection standards and requirements for wireless communications facilities.  
Sec. 28-1632. - Standards for telecommunications towers.  
Sec. 28-1633. - Standards for antennas.  
Sec. 28-1634. - Use of public rights-of-way.  
Sec. 28-1635. - Replacement or modification of a wireless communications facility.  
Sec. 28-1636. - Indemnification, insurance, security funds, and violations.  
Secs. 28-1637—28-1645. - Reserved.

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**Sec. 28-1622. - Intent.**

The regulations and requirements of this division establish general guidelines for the siting of wireless communications towers and antennas and are intended to accomplish the following purposes:

- (a) Protect and promote the public health, safety and general welfare of the residents of the city;
- (b) Minimize potential adverse impacts of towers and antennas upon residential areas and land uses;
- (c) Encourage the location of towers in non-residential areas and to locate them, to the extent possible, in areas where the adverse impact on the community is minimal;
- (d) Minimize the total number of towers throughout the community by strongly encouraging the collocation of antennas on new and pre-existing tower sites and structures as a primary option rather than construction of additional single-use telecommunications towers;
- (e) Encourage users of telecommunications towers and antennas to configure them in a way that minimizes the adverse visual impact of the telecommunications towers and antennas through careful design, siting, landscape screening, and innovative camouflaging techniques;
- (f) Minimize potential damage to property from telecommunications towers and wireless communications facilities by requiring such structures to be soundly designed, constructed, modified and maintained; and
- (g) Enhance the ability of the providers of wireless communications services to provide to the community reliable wireless communications services based on best practices through an efficient and timely application process.

In furtherance of the purposes stated above, the city shall at all times give due consideration to the

city's comprehensive plan, zoning map, existing land uses, and environmentally sensitive areas, in approving sites for the location of wireless communications facilities.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1623. - Applicability.**

- (1) All new wireless communications facilities and reconstruction or modifications to existing wireless communications facilities in the city shall be subject to the regulations in this chapter to the full extent permitted under applicable state and federal law.
- (2) Pre-existing telecommunications towers or antennas shall not be required to meet the requirements of this chapter, other than the specific requirements set forth herein.
- (3) Broadcasting facilities/amateur radio station operators/receive only antennas. This chapter shall not govern any broadcasting facility or a wireless communications facility owned and operated by a federally-licensed amateur radio station operator or which is used exclusively for receive only antennas; however, requests for placement of an amateur radio antenna in the city shall be processed in accordance with applicable law.
- (4) Pending applications. This chapter shall apply to pending applications for wireless communications facilities, as defined herein unless prohibited by applicable law.
- (5) Not essential services. The providing of personal wireless services and the siting and construction of wireless communications facilities shall be permitted pursuant to this chapter and shall not be permitted as essential services or public safety telecommunications as defined herein.
- (6) Except for matters herein specifically reserved to the city council, the city manager shall be the principal city official responsible for the administration of this chapter. The city manager may delegate any or all of the duties hereunder unless prohibited by applicable law.
- (7) AM array. For purposes of implementing this chapter, an AM array, consisting of one or more tower units and supporting ground system which functions as one AM broadcasting antenna shall be considered one tower. Measurements for setbacks and separation distances shall be measured from the outer perimeter of the towers included in the AM array. Additional tower units may be added within the perimeter of the AM array by right.
- (8) An applicant must submit an application and pay the applicable fee specified in the Boca Raton Municipal Facilities and Services User Fee Schedule, as either or both may be amended from time to time, to apply for the construction, installation, or placement of a wireless communications facility, within the city consistent with the terms of this chapter. The city may create a different application for collocation applications.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1624. - General rules of interpretation and definitions.**

- (1) Interpretation. In the absence of definitions, the standard dictionary meaning shall be utilized. In any event, the City Manager shall have the right to interpret the terms contained in this subdivision. In construing the meaning of the subdivision, the following rules shall apply:
  - (a) Words used in the present tense also include the future tense.
  - (b) Words used in the singular number also include the plural and vice-versa.
  - (c) The word "shall" is mandatory. The word "may" is permissive.
  - (d) The word "development" shall refer also to "project" and the area in which a project takes place.
  - (e) The words "used" or "occupied" shall be construed to include arranged, designed, constructed, altered, converted, rented, leased, intended to be used, or intended to be occupied.
  - (f) The word "lot" shall refer also to plot, parcel, tract and premises.
  - (g) The word "building" shall refer also to structure, mobile home, dwelling and residence.
  - (h) The words "area" and "district" may indicate and include the meaning "zone."
  - (i) Except where specified, the provisions of this article shall be construed to mean the minimum standards, requirements and regulations adopted in pursuit of the purposes of this subdivision.
- (2) Definitions. As used in this division, the following words, terms and phrases, when used in this division shall have the meanings set forth below, and for the purpose of this division shall control over any other

definitions contained in the City's Code of Ordinances. Words not defined shall be given their common and ordinary meaning.

"Accessory use" means a secondary use including a use that is not related to, incidental to, subordinate to and subservient to the main use of the property on which an antenna and/or telecommunications tower is sited.

"Amateur radio antenna" means an antenna used to engage in amateur radio communications as licensed by the FCC and in accordance with federal law.

"Antenna" means a transmitting and/or receiving device mounted on a telecommunications tower, building or structure and used in wireless communications services that radiates or captures electromagnetic waves, digital signals, analog signals, radio frequencies, wireless communications signals and other communications signals, including directional antennas such as panel and microwave dish antennas, and omni-directional antennas such as whips, but excluding radar antennas, amateur radio antennas and satellite earth stations.

"Applicant" means any party submitting an application within the meaning of this division.

"Application" means any proposal, submission or request to construct, operate, or maintain a telecommunications tower, equipment facility, wireless communications facility, or antenna within the city or to seek any other relief from the city pursuant to this division.

"Array" means a group of antennas that are either (i) mounted or side mounted on the rooftop of a building or rooftop structure(s); or (ii) directly or indirectly mounted on a telecommunications tower.

"Broadcasting facility" means any telecommunications tower or antenna built primarily for the purpose of broadcasting AM, FM or television signals.

"Building Code" means the Florida Building Code, as amended, the National Electrical Code, as amended, the National Electrical Safety Code, as amended, FCC regulations, as amended, and any other applicable federal, state, and local building codes.

"Building-permit review" means a review for compliance with building and related construction standards adopted by the city and does not include a review for compliance with land development regulations.

"Carrier" means a company licensed by the Federal Communications Council (FCC) that provides wireless services. A tower builder or owner is not a carrier unless licensed to provide personal wireless services.

"City" means the City of Boca Raton, Florida.

"Collocation" means the situation when a second or subsequent wireless provider uses an existing structure to locate a second or subsequent antenna. The term includes the ground, platform, or roof installation of equipment enclosures, cabinets, or buildings, and cables, brackets, and other equipment associated with the location and operation of the antennas.

"Commercial mobile radio services" means, per section 704 of the Telecommunications Act of 1996, any of several technologies using radio signals at various frequencies to send and receive voice, data and video.

"Equipment facility" means a room, cabinet, shelter, pedestal, build-out of an existing structure, building, or similar structure used to house ancillary equipment for a telecommunications tower or antenna. Each such cabinet, shelter, or building shall be considered a separate equipment facility.

"Essential services" means those services provided by the city and other governmental entities that directly relate to the health and safety of its residents, including fire, police and rescue.

"Existing structure" means a structure that exists or a structure for which a building permit has been issued and is in effect at the time an application for permission to place an antenna on a structure is filed with the city. The term includes any structure that can structurally support the attachment of an antenna in

compliance with applicable codes, excluding poles.

"Extraordinary conditions" are those that occur subsequent to a hurricane, flood, or other natural hazard or subsequent to a defective finding on a previous inspection.

"FAA" means the Federal Aviation Administration.

"FCC" means the Federal Communications Commission.

"Guyed tower" means a telecommunications tower that is supported, in whole or in part, by guy wires and ground anchors.

"Height" means the distance measured from the ground level to the highest point of a telecommunications tower or other structure. For the purposes of measuring height, the base pad and all antennas or other attachments mounted on a structure shall be included in the measurements to determine overall height. Lightning arrestors, also known as lightning rods, shall not be included in the calculation of height.

"Interference" means the impairment of transmission or reception of any public safety communications, licensed frequencies or licensed radio frequencies within the city. This term embraces electrical interference in all of its forms, including, without limitation, co-channel interference, interference from intermodulation products, and blanketing inference.

"Historic building, structure, site, object, or district" means any building, structure, site, object, or district that has been officially designated as a historic building, historic structure, historic site, historic object, or historic district through a federal, state or local designation program.

"Land development regulations" means any ordinance enacted by the city for the regulation of any aspect of development, including ordinances governing zoning, subdivisions, landscaping, tree protection, or signs, the city's comprehensive plan, or any other ordinance concerning any aspect of the development of land.

"Microwave dish antenna" means a dish-like antenna used to link telecommunications sites together by wireless transmission and/or receipt of voice or data.

"Monopole tower" means a telecommunications tower consisting of a single pole or spire self-supported on a permanent foundation, constructed without guy wires, ground anchors, or other supports.

"Person" means any natural person, firm, partnership, association, corporation, company, or other legal entity, private or public, whether for profit or not for profit.

"Personal wireless services" means commercial mobile radio services, unlicensed wireless services, and common carrier wireless exchange access services, as defined under federal law, 47 U.S.C. §332(c)(7)(C), or as this definition may be amended from time to time, and includes but is not limited to, cellular, personal communication services, specialized mobile radio, enhanced specialized mobile radio, and paging service. Personal wireless services shall not be considered as essential services, public safety telecommunications, public utilities or private utilities.

"Pole" means any utility, electricity, telephone, power or light pole, erected for the purpose of and providing such services, other than any such pole owned by the city.

"Pre-existing tower" means a telecommunications tower for which a building permit has been properly issued prior to the effective date of this division, including permitted telecommunications towers that have not yet been constructed so long as such approval is current and not expired.

"Preferred zoning districts" means the zoning districts within this division in which the city provides a preference for the installation of wireless communications facilities.

"Public safety communications" means any and all non-public wireless communications systems providing services exclusively to and from police, fire, and other emergency services operating within the city.

"Public rights-of-way" or "ROW" means a public right-of-way, public utility easement, highway, street,

bridge, tunnel, pier, waterway, dock, wharf, court, lane, path, or alley or any other property for which the city is the authority that has jurisdiction and control and may lawfully grant access to such property pursuant to applicable law, and includes the surface, the air space over the surface and the area below the surface to the extent the city holds a property interest therein. "public rights-of-way" shall not include private property. "Public rights-of-way" shall not include any real or personal property except as described above and shall not include city buildings, fixtures, poles, conduits, facilities or other structures or improvements, regardless of whether they are situated in the public rights-of-way.

"Roofline" The overall ridge line of the structure which does not include cupolas, elevator towers, clock towers or other features that are permitted to exceed the maximum height of the buildings

"Rooftop" means the exterior surface on the top of a building or structure.

"Search area" means the geographic area in which a wireless communications facility must be located in order to provide, at a minimum, FCC required coverage, as certified through an affidavit by a radio frequency engineer or other such appropriate technical expert. The search area includes that initial circular area which has a radius of no less than one mile designated by a wireless provider or operator for a new tower. The search area shall be determined based upon engineering considerations including grids, frequency coordination and levels of service consistent with good engineering practices.

"Self-support tower" means a tapered structure broad at the base and narrower at the top consisting of cross-members and diagonal bracing and without guyed support (also known as lattice towers).

"Setbacks" means the required distance from the telecommunications tower or equipment facility to the property line of the parcel on which the wireless communications facility is located.

"Service provider" means any person or business entity that has located or is wishing to locate a telecommunications tower or antenna within the city limits to support or to provide personal wireless services.

"State of the art" means technology that provides the level of capacity, equipment, facilities, and components necessary for the reliable and feasible support of and provision of personal wireless services using the least intrusive means reasonably available.

"Stealth facility or tower" or "stealth" means any wireless communications facility or tower that is disguised, hidden, part of proposed or existing structure, or placed within a proposed or existing structure in a manner that makes it not readily identifiable as a wireless communications facility or designed to blend into the surrounding environment. Examples of such facilities would include, but are not limited to, architecturally screened roof mounted antenna, building-mounted antenna painted to match the existing structure, antenna integrated into architectural elements, a bell tower, spire, flag pole, etc, or other similar structures.

"Telecommunications Act" means the Telecommunications Act of 1996, Pub. L No. 104-104, codified at 47 U.S.C., and as may be amended from time to time.

"Telecommunications tower" or "tower" means any structure, and support thereto, designed and constructed primarily for the purpose of supporting one or more antennas intended for transmitting or receiving personal wireless services, telephone, radio and similar communication purposes, including stealth, monopole, and guyed towers. The term includes radio and television transmission telecommunications towers, microwave telecommunications towers, common-carrier telecommunications towers, and cellular telephone telecommunications towers, among others. Poles are only a support structure and are not a telecommunications tower.

"Whip antenna" means a cylindrical antenna that transmits signals in 360 degrees.

"Wireless communications facility" means any equipment or facility used to provide personal wireless service and may include, but is not limited to, antennas, towers, equipment facility, cabling, antenna brackets, and other such equipment. Placing a wireless communications facility on an existing structure does not cause the existing structure to become a wireless communications facility. It also means personal wireless services facilities, as defined under federal law, 47 U.S.C. § 332(c)(7)(C), as this definition may be amended from time to time, and includes, but is not limited to, antennas and radio-transmitting telecommunications towers, and associated facilities used to transmit telecommunications signals. Poles are only a support structure and are not a wireless communications facility. An open video system is not a wireless communications facility to the



extent that it provides video services; a cable or video system is not a wireless communications facility to the extent that it provides cable or video services.

(Ord. No. 5095, § 4, 7-28-09)

**Sec. 28-1625. - Application requirements and standards for wireless communications facilities excluding collocations (as provided in section 28-1326).**

- (1) Unless exempted from these requirements as set forth below, or as otherwise required by state or federal law, permits shall be required for the installation of wireless communications facilities, including telecommunications towers and antennas by application submitted to the city.
- (2) In addition to the submission requirements for an application for site plan approval provided by any other provision of the City Code, the following information must be included in all applications, including applications for installations of telecommunications towers and antennas but excluding collocation applications.
  - (a) Current boundary and topographical survey of the property, including but not limited to, the location of all overhead and underground public utilities; telecommunication, irrigation, cable, water, sewer, drainage, municipal fiber optic equipment and other facilities, as applicable to the proposed wireless communication facility.
  - (b) Description of the personal wireless services currently provided and/or to be provided by the applicant over the proposed wireless communications facilities in the City.
  - (c) Location of the proposed facilities and a remedial action plan for the facilities that includes procedures to be undertaken to rectify structural deficiencies, safety hazards, or any interference with or obstruction to public safety communications, plans to make necessary repairs and/or accommodations to alleviate any such structural deficiencies, hazards, interference, or obstruction, and a minimum period within which the repairs and/or accommodations will be made. The remedial action plan shall include names and addresses of contact information for owner personnel responsible for the wireless communications facility. Any change in the contact information that occurs when the wireless communication facility is approved and operating shall be reported immediately to the city manager or designee in writing. The city manager or designee is authorized to waive the requirement for the remedial action plan in those cases where he or she determines that it is not required.
  - (d) Identification of the trees, structures, improvements, facilities and obstructions, if any, that applicant proposes to temporarily or permanently remove or relocate.
  - (e) Identification of all applicable FCC licenses and approvals.
  - (f) Demonstration that the telecommunication tower or wireless communications facility conforms with the state of the art or, alternatively, that state of the art technology is unsuitable for the site involved. Costs of state of the art technology that exceed new tower development shall not be presumed to render the technology unsuitable.
  - (g) Lot size. For purposes of determining whether the installation of a telecommunications tower or antenna complies with the zoning provisions, including, but not limited to, setback requirements, lot coverage requirements, and other such requirements, the dimensions of the entire lot shall control, even though the antenna or telecommunications tower may be located on leased parcels within such lot.
  - (h) An inventory of existing sites. Each applicant shall provide the city with an inventory of its pre-existing telecommunications towers and antennas, and the preexisting sites of any other telecommunications towers, antennas and wireless communications facilities within a two-mile radius of the site within city limits and one mile of the potential site of the proposed wireless communications facility outside city limits.
  - (i) For applications for new telecommunications towers, the applicant must provide information to demonstrate, pursuant to the procedures listed within this section, that no pre-existing tower, existing structure, or state of the art technology that does not require the use of new telecommunications towers or new structures, can accommodate or be modified to accommodate the applicant's proposed wireless communications facility. Evidence submitted to demonstrate that no pre-existing tower, existing structure or state of the art technology is suitable may consist of an affidavit from an engineer licensed to practice in the state or by an engineer



exempt from such requirement under state law, and with experience with radio frequency and wireless communications facilities, determining or demonstrating the following:

1. That pre-existing towers or existing structures located within the search area do not have the structural capacity to provide reasonable technical service consistent with the applicant's technical system, including but not limited to, applicable FCC requirements.
  2. That pre-existing towers or existing structures are not of sufficient height to meet, at a minimum, applicable FCC requirements, or engineering requirements of the applicant.
  3. That pre-existing towers or existing structures do not have sufficient structural strength or capacity to support applicant's proposed antenna and related equipment, or a replacement tower is not economically feasible.
  4. That the applicant's proposed antenna would cause electromagnetic/radio frequency interference with antennas on pre-existing towers, antennas or existing structures, or the antenna on the pre-existing towers or structures would cause interference with the applicant's proposed antenna.
  5. That the applicant's proposed antenna on a pre-existing tower or existing Structure would cause interference with public safety telecommunications.
  6. That the applicant made diligent efforts but was unable to identify a feasible location or to obtain permission to install or collocate the applicant's wireless communications facilities on pre-existing towers or usable antenna support located within a one-mile radius from the proposed site.
  7. That there are other limiting factors that render pre-existing towers and existing structures unsuitable.
- (j) The site planning and engineering report, as defined below.
- (k) If applicable, a signed affidavit from the landowner that an executed lease agreement with a service provider for placement of the wireless communications facility and/or tower exists or will be executed upon approval of the application, and where it will be located.
- (l) Additional information that the city may request consistent with this chapter and applicable law to process the application. In the event the city requests any additional information, the time in which an application is processed shall be tolled pending receipt and further evaluation.
- (m) Consultant fee. The city shall have the right to retain independent technical consultants and experts that it deems necessary to properly evaluate applications in accordance with applicable law. The consultant fee shall be based upon the hourly rate of the independent technical consultant or expert the city deems necessary properly to evaluate applications. The consultant fee shall be applied to those applications requiring special review or evaluation. applicant shall reimburse the consultant fees to the city prior to issuance of any permits.
- (n) To the extent not prohibited by applicable law, any application for a wireless communications facility shall also include a certification from an engineer licensed to practice in the state or by an engineer exempt from such requirement under state law, and with experience with radio frequency and wireless communications facilities, that the proposed facility, including reception and transmission functions, is not expected to interfere with or obstruct transmission to and from existing public safety communications facilities.
- (3) Site planning and engineering report. The site planning and engineering report shall be prepared in accordance with this division. The following information shall be included in all applications except collocation applications pursuant to section 28-1626. The required engineering analyses shall be prepared by an engineer licensed to practice in the state or by an engineer exempt from such requirement under state law, and with experience with radio frequency and wireless communications facilities. The site planning and engineering report shall include:
- (a) A site development plan of the entire subject property drawn to scale, including, without limitation:
1. A tax parcel number, legal description of the parent tract and leased parcel, total acres, and section/township/range of the subject property;
  2. The lease parcel fully dimensioned, including property lines, setbacks, roads on or adjacent to the subject property, easements, rights-of-way, and/or other encumbrances;
  3. Outline of all existing buildings, including purpose (i.e. residential buildings, garages, accessory structures, etc.) on subject property;

4. Where applicable, all existing vegetation, by mass or individually by diameter, measured four feet from the ground of each stand-alone tree on the subject property;
  5. Proposed/existing security barrier, indicating type and extent as well as point of controlled entry;
  6. Proposed/existing access easements, utility easements, and parking for the telecommunications tower;
  7. All proposed changes to the subject property, including grading, vegetation removal, temporary or permanent roads and driveways, storm water management facilities and any other construction or development attendant to the telecommunications tower;
  8. Scaled elevation drawing of proposed telecommunications tower, including location of all mounts, antennas, equipment facilities, fencing and landscaping;
  9. If applicable, on-site and adjacent land uses.
- (b) If applicable, a narrative of why the proposed telecommunications tower cannot comply with applicable requirements, including engineering analyses as applicable.
- (c) The type of telecommunications tower and specifics of design including, if appropriate, the following:
1. Equipment brochures for the proposed tower such as manufacturer's specifications or trade journal reprints. These shall be provided for the antennas, mounts, equipment facilities, security barriers and any other equipment necessary to construct the tower, if any;
  2. Materials of the proposed tower specified by generic type and specific treatment (i.e., anodized aluminum, stained wood, painted fiberglass, etc.). These shall be provided for the antennas, mounts, equipment facilities, cables as well as cable runs, and security barrier, if any;
  3. Colors of the proposed tower represented by a color board showing actual colors proposed. Colors shall be provided for the antennas, mounts, equipment facilities, cables as well as cable runs, and security barrier, if any;
  4. Dimensions of the tower specified for all three directions: height, width and breadth. These shall be provided for the antennas, mounts, equipment facilities and security barrier, if any; and
  5. A visual impact analysis, with a minimum of two photo digitalization or photographic superimpositions of the tower within the subject property. The photo digitalization or photographic superimpositions shall be provided for all attachments, including: the antennas, mounts, equipment facilities, and other equipment necessary to construct the tower, and security barrier, if any for the total height, width and breadth, at a distance of 250 feet and 500 feet from a property within that range, as required for community appearance board review, or at other points agreed upon in a preapplication conference.
- (d) Current wind-loading capacity and a projection of wind-loading capacity using different types of antennas as contemplated by the applicant. No telecommunications tower shall be permitted to have its wind loading capacity lower than as provided for by the state building code.
- (e) An affidavit from a Florida registered professional engineer or by an engineer exempt from such requirement under state law, and with experience with radio frequency and wireless communications facilities stating that the proposed wireless communications facility, including reception and transmission functions, will not cause interference.
- (f) An affidavit from an engineer licensed to practice in the state or by an engineer exempt from such requirement under state law stating confirming compliance with all applicable building codes, associated regulations and safety standards. For all wireless communications facilities attached to existing structures, the statement shall include certification that the structure can support the load superimposed from the wireless communications facility.

(Ord. No. 5095, § 4, 7-28-09)

#### Sec. 28-1626. - Application requirements and standards for collocations.

- (1) The following information must be included in all collocation applications.
- (a) An engineering report, from an engineer licensed to practice in the state or by an engineer

exempt from such requirement under state law, and with experience with radio frequency and wireless communications facilities, that shall include:

1. A statement of compliance with this chapter and all applicable building codes, associated regulations and safety standards as provided herein. The statement shall include certification that the existing structure can support the load superimposed from the antenna(s).
  2. The type of antenna and specifics of design including, if appropriate, the following:
    - a. Equipment brochures for the proposed antenna such as manufacturer's specifications or trade journal reprints. These shall be provided for the antennas, mounts, equipment facilities, cables as well as cable runs, and security barrier, if any;
    - b. Materials of the proposed antenna specified by generic type and specific treatment (i.e., anodized aluminum, stained wood, painted fiberglass, etc.). These shall be provided for the antennas, mounts, equipment facilities, cables as well as cable runs, and security barrier, if any;
    - c. Colors of the proposed antenna represented by a color board showing actual colors proposed. Colors shall be provided for the antennas, mounts, equipment facilities, cables as well as cable runs, and security barrier, if any;
    - d. Dimensions of the proposed antenna specified for all three directions: height, width and breadth. These shall be provided for the antennas, mounts, equipment facilities and security barrier, if any; and
    - e. A visual impact analysis, with a minimum of two photo digitalization or photographic superimpositions of the pre-existing tower and proposed antenna within the subject property. The photo digitalization or photographic superimpositions shall be provided for all attachments, including: the antennas, mounts, equipment facilities, any other equipment necessary to install and operate the antenna and security barrier, if any, for the total height, width and breadth, at a distance of 250 feet and 500 feet from a property within that range, as required for community appearance board review, or at other points agreed upon in a pre-application conference.
  3. Current wind-loading capacity and a projection of wind-loading capacity using different types of Antennas as contemplated by the applicant. No Telecommunications Tower shall be permitted to have its wind loading capacity lower than as provided for by the Florida Building Code.
- (b) If applicable, a signed affidavit from the landowner that an executed lease agreement with a service provider for placement of the wireless communications facility collocation exists or will be executed upon approval of the Application, and where the wireless communications facility will be collocated; and
- (c) Additional information that the city may request consistent with this chapter and applicable law to process the application. In the event the city requests any additional information, the time in which an application is processed shall be tolled pending receipt and further evaluation.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1627. - Installations on municipal property.**

- (1) Applications for a wireless communications facility on property owned, leased or otherwise controlled by the city, except for public rights-of way, shall require a lease agreement approved by the city council and executed by the city and the owner of the proposed wireless communications facility. The city may require, as a condition of entering into a lease agreement, the dedication of space on the facility for public safety communications purposes, as well as property improvement on the leased space. Any dedications and improvements shall be negotiated prior to execution of the lease.
- (a) Leases granted pursuant to this chapter may or may not, in the sole and absolute discretion of the city, convey the exclusive right, privilege, permit or franchise to occupy or to use the public lands of the city subject to the lease for delivery of personal wireless services or any other purpose.
- (b) No lease granted pursuant to this chapter shall convey any right, title or interest in the public lands other than a leasehold interest, and shall be deemed only to allow the use of the public

lands for the limited purposes and term stated in the lease. No lease shall be construed as a conveyance of a title interest in the property.

- (c) Any and all collocations or placements of antennas on a wireless communications facility that is located on property owned, leased or otherwise controlled by the city, except for public rights-of-way, may require a separate lease agreement with the city as well as full compliance with the requirements of this chapter for such collocations and placements of antennas.
- (d) Pursuant to applicable law, the city may contract with a third party to administer city-owned property for purposes of developing city-owned sites, consistent with the terms of this chapter. Except as specifically provided herein, the terms of this chapter, and the requirements established thereby, shall be applicable to all telecommunication towers or personal wireless service facilities to be developed or collocated on city-owned sites.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1628. - Application fees, development standards and process.**

- (1) Filing fee. All applications shall be accompanied by the applicable nonrefundable filing fee specified in the Boca Raton Municipal Facilities and Services User Fee Schedule, as adopted by resolution of the city council.
- (2) Applicants regulated by this chapter may request a pre-application conference with the city. Such request shall be submitted with a non-refundable fee to reimburse the city for the cost and fees incurred by the conference.
- (3) Unless otherwise authorized by state or federal law, no person shall construct, install or maintain a wireless communications facility within the city without the city's approval pursuant to this chapter.
- (4) The city manager or designee shall review the application for consistency with the city's comprehensive plan, land development regulations including this chapter, and compatibility of the proposed wireless communications facility with the surrounding neighborhood. For applications that are not subject to the city council's approval pursuant to this chapter, the city manager or designee shall issue a written decision either granting or denying an application. The city manager or designee shall not grant an application for a proposed wireless communications facility that will interfere with any public safety communications, or is otherwise not in compliance with this chapter. In the event the city manager or designee denies an application, the city manager or designee shall set forth the reasons for denial in writing.
- (5) Notification of completeness. The city manager or designee shall notify the applicant within 20 business days after the date the application is submitted as to whether the application is, for administrative purposes only, properly completed and has been properly submitted in accordance with the requirements set forth above. However, such determination shall not be deemed as an approval of the application. Such notification shall indicate with specificity any deficiencies which, if cured, could make the application properly completed.
- (6) In the event that the city manager or designee determines that a proposed wireless communications facility subject to the city council's approval is not in compliance with this chapter, the city manager or designee may recommend that the city council deny the application and shall set forth the reasons for denial in writing, in accordance with applicable law. Provided, however, that in the event a proposed wireless communications facility is not in compliance with one or more requirements of this division, the city manager may recommend approval of the application if the city manager determines that the requested modification to the development standards of this division will not be detrimental to the city.
- (7) After the city manager or designee has determined that the application is ready to be processed, the application shall be forwarded, as applicable, depending on the type of application, to the appropriate staff, the community appearance board, the planning and zoning board, and the city council pursuant to the requirements of this division, in accordance with applicable law. The city council shall consider the application, the recommendation of the community appearance board and planning and zoning board, where applicable, the city manager or designee's recommendation, and any additional evidence presented by the applicant, city staff and the public.
- (8) Any decision of the city council to deny an application shall authorize the city manager or designee to set forth in writing the city council's reasons for the denial. It is the intent of this section to establish a procedure for compliance with the "written decision" and "substantial evidence" requirements of the Telecommunications Act, 47 U.S.C. § 332(c)(7)(B)(iii).

- (9) The city shall grant or deny each properly completed application for a collocation based on the application's compliance with this chapter, City Code and any other applicable regulations, and within the normal timeframe for a similar building permit review but in no case later than 45 business days after the date the application is determined to be properly completed. This timeframe shall not apply to lease negotiations for collocation on city-owned property.
- (10) The city shall grant or deny each properly completed application for any other wireless communications facility based on the application's compliance with this chapter and any other applicable law, including but not limited to the City Code and within the normal timeframe for a similar type of review, but in no case later than 90 business days after the date the application is determined to be properly completed. This timeframe shall not apply to lease negotiations for wireless communications facilities on city-owned property.
- (11) An application is deemed submitted or resubmitted on the date the application is received by the city. If the city does not notify the applicant in writing that the application is not completed in compliance with the city's regulations within 20 business days after the date the application is initially submitted or additional information resubmitted, the application is deemed, for administrative purposes only, to be properly completed and properly submitted. However, the determination shall not be deemed as an approval of the application. If the application is not completed in compliance with the city's regulations, the city shall so notify the applicant in writing indicating with specificity any deficiencies in the required documents or deficiencies in the content of the required documents which, if cured, would make the application properly completed. Upon resubmission of information to cure the stated deficiencies, the city shall notify the applicant, in writing, within the normal timeframes of review, but in no case longer than 20 business days after the additional information is submitted, of any remaining deficiencies that must be cured. However, if applicant does not cure the application deficiencies within 20 business days after receiving the notice of deficiencies, the application shall be considered withdrawn or closed unless an extension due to reasonable circumstances of the time to cure is requested by the applicant prior to the expiration of the 20-day period and such extension is granted by the city manager.
- (12) The timeframes specified in this subsections (9) and (10) may be extended, only to the extent that the application has not been granted or denied, because the city's procedures generally applicable to all other similar types of applications require action by the city council and/or planning and zoning board and/or community appearance board, and such action has not taken place within the specified timeframes. Under such circumstances, the city council, planning and zoning board, or community appearance board, as applicable, shall either grant or deny the application at its next regularly scheduled meeting, or, otherwise, the application shall be deemed automatically to be approved; accordingly, the city manager or designee may by letter to the applicant extend the timeframe for a decision until the next available scheduled meeting date of the city council and/or planning and zoning board and/or community appearance board as to whether to grant or deny an application for a permit taken pursuant to this division.
- (13) The city may request, but not require, a waiver of the timeframes by the applicant, except that, with respect to a specific application, the city may require a one-time waiver in the case of a declared local, state, or federal emergency that directly affects the administration of all permitting activities of the city.
- (14) The city may enter into an entry and testing agreement with the wireless communications facility owner, applicant and/or operator, in a form approved by the city attorney, without approval of the city council.
- (15) Notwithstanding the foregoing, the city and an applicant may voluntarily agree to waive the timeframes set forth above.
- (16) Appeal. If an application is denied by the city manager or designee for noncompliance with the requirements of this chapter then the applicant may appeal this decision to the city council in accordance with the timeframes and procedures specified in section 28-56 of the City Code. Any decision appealed from the city council may be appealed in accordance with applicable law.
- (17) Modification of development standards. If an applicant seeks a modification to the wireless communications facility development standards provided in this division, the applicant shall provide the nature of the specific relief sought and the engineering justification to demonstrate that, without such relief, applicability of the regulations would have the effect of prohibiting the provision of reliable and feasible personal wireless services.
- (18) Nonconforming towers. Any telecommunications towers in existence in the city upon the effective date of this chapter that are nonconforming with the terms and provisions of this section shall have five years from the effective date in which to be brought into compliance; provided, however, that a modification of

development standards may be requested, pursuant to section 28-1628(15), to permit the continued existence of a nonconforming telecommunications tower. Notwithstanding the foregoing, a nonconforming telecommunications tower may remain on the site where it was originally approved provided that it is able to accommodate the minimum number of different users established by the collocation requirements of section 28-1632(1)(a). Such nonconforming towers may be reconstructed to accommodate collocations provided that the degree of nonconformity with regard to location, height, and setback, is not increased by the reconstruction.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1629. - Collocation.**

- (1) It is the intent of the city to encourage collocation of antennas on existing structures and pre-existing towers. Except as provided herein, all towers shall have the capacity to permit multiple users.
- (2) Collocation incentive. To encourage such collocation, the city manager or designee may approve an application submitted to collocate antennas on an existing structure, pre-existing tower, or a stealth facility, consistent with this chapter. The specific collocation applications indicated in the sub-sections below shall be subject to administrative approval.
- (3) Any antenna and related equipment to service the antenna that is being collocated on an above-ground existing structure is not subject to land development regulations of the city code if the following criteria are met:
  - (a) The existing structure already contains an established antenna and related equipment;
  - (b) The existing structure is not non-conforming and may pursuant to state law be expanded or the existing structure is non-conforming and the collocation will not increase the degree of nonconformity; and
  - (c) The height of the existing structure containing the antenna and related equipment would not be increased by the addition of antenna and related equipment.

Notwithstanding the exemption provided for in this section, construction of the antenna and related equipment is subject to review by the city manager or designee and any other city department or agency for compliance with the city's design standards and life safety codes, including but not limited to building codes; conditions or requirements (except limitations on collocations or the number of antennas) in any existing permits, agreements, or approvals. Moreover, this section shall not relieve the permit holder or owner of the existing structure or property from compliance with any applicable condition or requirement of a permit, agreement, or land development regulation, including but not limited to any aesthetic requirements, or law.

- (4) Applications for collocation on towers.
  - (a) Collocations on towers, including nonconforming towers are subject to only building-permit review, which may include a review for compliance with this section, if they meet the following requirements:
    1. The collocation does not increase the height;
    2. The collocation does not increase the ground space area, commonly known as the compound, approved in the site plan for equipment facilities and ancillary facilities, except as allowed under this chapter; and
    3. The collocation consists of antennas, equipment facilities, and ancillary facilities that are of a design and configuration consistent with all applicable regulations, restrictions, or conditions, if any, applied to the initial antennas placed on the tower and to its accompanying equipment facilities and ancillary facilities and, if applicable, applied to the tower supporting the antennas. Such regulations may include the design and aesthetic requirements, but not procedural requirements, other than those authorized by this section, of the applicable land development regulations in effect at the time the initial antennas placement was approved.
  - (b) Such collocations are not subject to any design or placement requirements of land development regulations in effect at the time of the collocation that are more restrictive than those in effect at the time of the initial antennas placement approval, to any other portion of the land development regulations, or to public hearing review. Such collocation applications are not subject to the city council's approval and shall be decided by the city manager or designee.
- (5) Applications for collocation (other than on towers).

- (a) Except for a historic building, structure, site, object, or district, the following collocation applications on all other existing structures shall also be subject to no more than a city manager or designee review if they meet the following requirements:
1. The collocation does not increase the height;
  2. The collocation does not increase the existing ground space area by more than 25 percent, otherwise known as the compound, if any, approved in the site plan for the equipment facility and ancillary facilities. The city manager shall require a new landscape plan for the expanded ground space area indicating, at a minimum, compliance with the previous conditions of approval or buffer requirements at the time the previous landscape plan or buffer was approved.
  3. The collocation consists of antennas, the equipment facility and ancillary facilities that are of a design and configuration consistent with any applicable structural or aesthetic design requirements and any requirements for location on the structure in effect at the time of approval of the structure, but not prohibitions or restrictions on the placement of additional collocations on the existing structure or procedural requirements, other than those authorized by this section of the chapter at the time of the collocation application; and
  4. The collocation consists of antennas, the equipment facility and ancillary facilities that are of a design and configuration consistent with all applicable restrictions or conditions, if any, that do not conflict with sub-section (c) and were applied to the initial antennas placed on the structure and to its accompanying the equipment facility and ancillary facilities and, if applicable, applied to the structure supporting the antennas.
- (6) If only a portion of the collocation does not meet the requirements of any of the above sub-sections, such as an increase in the height or a proposal to expand the ground space approved in the site plan for the equipment facility, where all other portions of the collocation meet the requirements of this subsection, that portion of the collocation only, may be reviewed by the city council after review and recommendation by the community appearance board and the planning and zoning board, as applicable. A collocation proposal under this subsection that increases the ground space area, otherwise known as the compound, approved in the original site plan for equipment facilities and ancillary facilities by no more than a cumulative amount of 400 square feet or 50 percent of the original compound size, whichever is greater, shall require no more than administrative review for compliance with the city's regulations, including but not limited to land development regulations review, and building permit review; provided, however, that any collocation proposal that increases the original compound size more than such greater cumulative amount shall be reviewed as if it were a new wireless communications facility.
- (7) The replacement of or modification to a wireless communications facility, except a tower, that results in a wireless communications facility not readily discernibly different in size, type, and appearance when viewed from ground level from surrounding properties, and the replacement or modification of equipment that is not visible from surrounding properties, all as reasonably determined by the city manager or his designee, shall require submittal of a building permit for approval by the city. This requirement shall not supersede any lease agreement between a service provider and landowner, including the city.
- (8) The owner of the pre-existing tower on which the proposed antennas are to be collocated shall remain responsible for compliance with any applicable condition or requirement of a permit or agreement, or any applicable condition or requirement of the land development regulations to which the pre-existing tower must comply, including any aesthetic requirements, provided the condition or requirement is not inconsistent with this section.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1630. - Interference with public safety communications.**

- (1) To the extent not inconsistent with applicable federal law, all providers of personal wireless services and all owners and/or operators of wireless communications facilities, shall comply with the following:
  - (a) Any wireless communications facility that causes interference with the operations of public safety communications services, shall, after receiving notice, rectify the interference immediately or, to the extent not inconsistent with applicable law, cease transmitting signals (go off the air) at once.
  - (b) In the event that the wireless communications facility interferes with public safety communications, it

shall be the responsibility of the owner and/or operator of the wireless communications facility that creates the interference to make all necessary repairs and/or accommodations to alleviate the problem at its expense. The city shall be held harmless from any action arising out of this occurrence.

- (c) In the event that a provider of personal wireless services and/or an owner and/or operator of wireless communications facility interferes with public safety communications, and thereafter ceases transmission of signals (goes off the air) and rectifies the interference, it may resume providing personal wireless services. If the city manager determines such interference requires further consideration by the city council, the matter shall be scheduled for city council review and the provider or operator shall be notified of the date and time of the review. The city council may take action as it deems necessary, in accordance with applicable law.
- (d) To the extent not inconsistent with applicable law, if a provider of personal wireless services or the owner or operator of a wireless communications facility, refuses to stop the interference or to cease transmitting signals as required herein, the city may file a complaint with the FCC for resolution and/or seek an injunction against it pursuant to F.S. § 843.025, that makes it unlawful for any person to deprive a law enforcement officer of his or her radio or to otherwise deprive the officer of the means to summon assistance, or pursue any other remedy authorized by applicable law. Any person who is found to have violated this section shall be punished as provided by applicable law.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1631. - Development, zoning, building, and inspection standards and requirements for wireless communications facilities.**

- (1) General regulations. The standards listed in this section apply specifically to all antennas, towers and wireless communications facilities, except those owned by the city, located on property owned, leased, or otherwise controlled and approved by the city or as otherwise specified herein. The city reserves the right to modify or waive the requirements for use on public property. The city shall not be required to provide access to city property.
- (2) The development, construction, maintenance and repair of wireless communications facilities are subject to the regulatory supervision of the city to the full extent permitted by applicable law and shall be performed in compliance with all laws, ordinances and practices affecting such facility including, but not limited to, zoning codes, building codes, and safety codes, and as provided in this chapter. No application for development or construction of a wireless communications facility shall be approved by the city unless and until, pursuant to F.S. § 365.172(12)(b)(1), all requirements relating to aesthetics, landscaping, land use based location priorities, structural design, setbacks, and all other applicable regulations have been addressed by the applicant and reviewed and approved by the city.
- (3) All proposed telecommunications towers and antennas must meet or exceed current standards and regulations of the FAA, the FCC, including emissions standards, and any other agency of the local, state or federal government with the authority to regulate towers and antennas prior to issuance of a building permit by the city. If such applicable standards and regulations are revised and require that existing facilities adhere to such revised standards, then the owners of telecommunications towers and antennas governed by this chapter shall bring such towers and antennas into compliance with such revised standards and regulations within 90 calendar days of the effective date of such standards and regulations, unless a different compliance schedule is established by the controlling agency or other applicable law. Failure to bring into compliance with such revised standards and regulations shall constitute grounds for the removal of the telecommunications tower, antenna or wireless communications facility at the owner's expense.
- (4) To ensure the structural integrity of telecommunications towers installed, the owner shall construct and maintain telecommunications tower in compliance with the state building code, and all other applicable codes and standards. A statement shall be submitted to the city by a Florida-registered professional engineer certifying compliance with this section upon completion of construction and/or subsequent modification. Where an existing structure or pole is requested as a stealth facility, the stealth facility, and all modifications thereof, shall comply with all requirements as provided in this chapter and all other applicable standards as may be amended from time to time.
- (5) Inspections.
  - (a) The city reserves the right to conduct periodic inspection of wireless communications facilities at the owner's expense, to ensure compliance with this chapter and other applicable codes and



- regulations. The city may conduct more frequent inspections of wireless communications facilities, should there be an emergency or extraordinary conditions.
- (b) If, upon inspection, the city concludes that a wireless communications facility fails to comply with such codes and standards and constitutes a danger to persons or property, then upon notice being provided to the owner, the owner shall commence work within 30 calendar days to bring such wireless communications facility into compliance with such standards. Failure to bring such wireless communications facility into compliance within 60 calendar days of notice, which may be extended up to 90 days by the city manager if the owner is working in good faith to cure, shall constitute grounds for requiring the removal of the facility at the owner's expense.
  - (c) The city reserves the right to require additional inspections if there is evidence that a tower or a wireless communications facility has a safety problem or is exposed to extraordinary conditions.
- (6) Wireless communications facilities in residential areas. The city prohibits the placement of a wireless communications facility in a residential area or residential zoning district unless the applicant demonstrates to the satisfaction of the city that it cannot reasonably provide its personal wireless service to the residential area or zone from outside the residential area or zone. In such a case, the city and the applicant shall cooperate to determine an appropriate location for a wireless communication facility of an appropriate design within the residential area or zone. The applicant shall reimburse any and all reasonable costs and expenses incurred by the city for this cooperative determination, including attorney's fees. Such application for cooperation shall be accompanied by an application fee in the same amount as for a new tower. The cooperation application shall not be subject to the timeframes contained in this chapter for granting and denying applications, but the city and the applicant shall cooperate to complete the review within a reasonable amount of time.
- (7) Hierarchy of zoning districts and siting alternatives. Development of a wireless communications facility shall be permitted in the following preferred zoning districts and in accordance with the following siting alternatives hierarchies.
- (a) The preferred zoning districts order of ranking, including public rights-of-way in any such zoning district, is from highest 1. to lowest 6. Where a lower ranked alternative is proposed, the applicant must demonstrate in its application that higher ranked options are not available. The availability of a less expensive lease on a lower ranked site is not sufficient in and of itself to justify using the lower ranked alternative where a higher ranked alternative is otherwise available.
    - 1. Industrial/warehouse districts (M-3, M-2, M-1, W-1, IG/S1); light industrial research park districts (LIRP-5, LIRP-2.5, Museum Center) and commercial and business districts (C-1, B-4, B-3, PT, LB, POI, B-2, B-1, CG, CN, CS)
    - 2. Mixed use districts (DDRI, VC)
    - 3. Public land PL district (subject to agreement with the city for use of city property) as well as other city-owned land in zoning districts other than residential
    - 4. Recreational REC district (assuming sufficient acreage to locate the installation no closer than 100 percent of the height of a proposed telecommunications tower from any abutting residential)
    - 5. Motel business RBI district
    - 6. Any other zoning district in accordance with 28-1631(6) above.
  - (b) The order of ranking for siting alternatives is from highest 1. to lowest 5. Where a lower ranked alternative is proposed, the applicant must demonstrate in its application that higher ranked options are not available. The availability of a less expensive lease on a lower ranked site is not sufficient in and of itself to justify using the lower ranked alternative where a higher ranked alternative is otherwise available.
    - 1. Collocation on existing telecommunications towers or existing structures in a preferred zoning district.
    - 2. Placement of an antenna on an existing structure (other than a collocation) in a preferred zoning district
    - 3. New stealth tower in a preferred zoning district.
    - 4. New telecommunications tower in a preferred zoning district.
    - 5. Any other installation in any other zoning district as provided herein.
  - (c) On property owned by the city, the city may authorize the application and use of city property only after the applicant executes a lease agreement acceptable to the city. The city shall have no

obligation whatsoever to execute any such lease even if the applicant can meet the criteria set forth herein.

- (8) Unstaffed communication buildings and structures.
- (a) Minimum setbacks. Unmanned communication buildings shall comply with the setback requirements applicable to accessory structures and/or equipment in the zoning district where such buildings are to be situated.
  - (b) Size limitations. Any unstaffed communication building shall be a permanent structure not to exceed 250 square feet in floor area, but may be up to 400 square feet in floor area if the city approves placement of a generator within such building.
  - (c) More than one unstaffed communication building may be permitted on a site; provided, however, that the total square footage of such buildings, added together, does not exceed:
    - 1. 1,200 square feet if the wireless communications facility installation has the capacity to accommodate three different users and provisions are made for a generator for each user on the site.
    - 2. 1,600 square feet if the wireless communications facility installation has the capacity to accommodate four different users and provisions are made for a generator for each user on the site.
    - 3. 2,000 square feet if the wireless communications facility installation has the capacity to accommodate five different users and provisions are made for a generator for each user on the site.

If the site contains more than one building, any required distance separation between the buildings may be waived by the city manager or designee, except as may be prohibited by applicable life safety codes.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1632. - Standards for telecommunications towers.**

- (1) Minimum standards. Except where a modification to the wireless communications facilities development standards of this section is granted by the city council pursuant to Section 28-1628(15), every telecommunications tower must meet the following minimum standards:
- (a) All telecommunications towers 80 feet or greater in height shall be designed and constructed with the capability of accommodating at a minimum two different service providers.
  - (b) The height of a telecommunications tower located in any residential area or residential zoning district of the city shall not exceed 100 feet. Any telecommunications tower constructed in a residential area or residential zoning district shall be located no closer than 100% of the height of the telecommunications tower to any residential structure that exists or for which a building permit has been issued and is in effect at the time of construction of the telecommunications tower.
  - (c) The height of a telecommunications tower in nonresidential areas and nonresidential zoning districts shall not exceed:
    - 1. 100 feet with the capacity of accommodating three different service providers.
    - 2. 120 feet with the capacity of accommodating four different service providers.
    - 3. 140 feet with the capacity of accommodating five different service providers.
  - (d) Telecommunications towers or antennas shall be approved by the Federal Aviation Administration (FAA) or other appropriate agency prior to issuance of a building permit by the city and comply with section 28-1628 of this Code. Prior to the issuance of a building permit(s) by the city, the applicant shall provide evidence that the telecommunications towers or antennas are in compliance with FAA regulations. Where an antenna will not exceed the highest point of the existing structure upon which it is to be mounted, such evidence shall not be required.
  - (e) All proposed wireless communications facilities shall comply with current radio frequency emissions standards of the FCC.
  - (f) All telecommunications tower sites must comply with the landscaping requirements of the city in force at the time the application for a telecommunications tower site plan approval is submitted to the city. A wall six feet in height constructed in accordance with the City Code, and as measured from the finished grade of the site, shall be required around the base of any tower and may be

required around any accessory building or structures.

- (g) The minimum required landscape buffering widths shall be consistent with the requirements of the City Code shall be installed around the entire outside perimeter of the concrete wall and/or buildings, encircling the leased premises on which said telecommunications tower shall be placed. Additional landscape buffer widths may be required by the community appearance board around the outside perimeter of the wall and around any or all anchors or supports if deemed necessary to buffer adjacent properties. The city council, upon site plan review, may require additional landscape buffer widths in excess of the above requirements as is deemed reasonably necessary in order to enhance compatibility with adjacent residential and nonresidential land uses. Landscaping shall be installed on the outside of the perimeter wall.
- (h) Landscaping, consistent with the minimum requirements of the City Code, as amended, shall be installed on the leased area, around the wall, any accessory buildings or structures. In addition to the city's landscaping requirements, the following landscaping shall be provided:
  - 1. A minimum row of large trees or large palms at least 16 feet in height, or one-half the height taller than the wall, which ever is larger, at a maximum distance of 12 to 15 feet apart, with ten- to-12 foot tall smaller trees in-between them shall be planted around the perimeter of the wall.
  - 2. A continuous branch-touching-branch hedge (full to the ground) shall fully screen all nonaccessible portions of the wall to the height of the wall or tallest element (not tower) at installation. All gates must be opaque, color and type to be approved by staff.
  - 3. All landscaping shall be properly installed and maintained in accordance to the approved site plan and city code requirements to insure good health and viability. All missing, dead, damaged or diseased landscaping shall be replaced with like kind per approved plans or at the established grown heights of the existing landscaping (which ever is larger) within 30 calendar days of notice.
  - 4. In locations where the impact of the wireless communications facility abuts residential properties the community appearance board may require such additional landscaping as necessary to protect the aesthetics and minimize the impact of the surrounding area.
  - 5. The city council, upon site plan review, may require additional landscaping in excess of the above requirements as deemed reasonably necessary in order to enhance compatibility with the adjacent residential and nonresidential land uses.
- (i) Telecommunications towers shall only be located on parcels larger than 2,500 square feet.
- (j) Warning signs for high voltage and trespassing.
  - 1. No signs, including commercial advertising, logo, political signs, flyers, flags, or banners, but excluding warning signs, shall be allowed on any part of an antenna or tower. Any signs placed in violation of this section shall be removed immediately at the facility owner's expense.
  - 2. If high voltage is necessary for the operation of the telecommunications tower, associated equipment, or any accessory structures, "HIGH VOLTAGE—DANGER" warning signs shall be permanently attached to the fence or wall and spaced no more than 40 feet apart.
  - 3. "NO TRESPASSING" warning signs shall be permanently attached to the fence or wall and spaced no more than 40 feet apart.
  - 4. The height of the lettering of the warning signs shall be at least 12 inches in height. The warning signs shall be installed at least five feet above the finished grade.
  - 5. The warning signs may be attached to freestanding poles if the content of the sign may be obstructed by landscaping.
- (k) Mobile or immobile equipment not used in direct support of a tower facility shall not be stored or parked on the site of the telecommunications tower, unless repairs to the tower are being made.
- (l) The minimum setbacks shall conform to the zoning districts where the towers are situated. Notwithstanding the above, the city manager may reduce minimum setback requirements for properties zoned industrial/warehouse, up to 25 feet from the rear yard and front yard, and 15 feet from the side yards, as measured from the base of the tower or from the guy wire anchor, whichever is closest to the property line or public right-of-way when, in his or her discretion, he or she believes said reduction in setbacks to be necessary in the interest of protection and safety of the public.

- (m) All telecommunication towers in nonresidential areas and nonresidential zoning districts shall be located no closer than 100 percent of the height of the tower from residential areas or districts, as measured on a straight line from the two closest points between the nearest residential zoning district line and the nearest point of the proposed tower structure.
- (n) The minimum distance separation between an existing tower and a proposed tower shall be no less than one mile. When a stealth facility or tower is proposed to be used by the applicant, or an existing tower or structure that serves another purpose, or a pole, then, in that event, the city manager or designee, may recommend a reduction in the minimum separation as set forth above up to 50 percent of said minimum separation, provided that the proper landscaping and/or buffering is put in place at the direction of the city manager or designee after approval and/or recommendation by the community appearance board, the planning and zoning board, and the city council, as applicable.
- (o) All buildings and other structures to be located on the same property as a telecommunications tower shall conform with the setbacks established for the underlying zoning district.
- (p) Each application for a wireless communications facility may be required to include written approval or a statement of no objection from other state agencies that may regulate wireless communications facility siting, design, and construction.
- (q) Removal of abandoned or unused facilities. A provider who has determined to discontinue its operations or part of its operations in the city must either:
  - 1. Remove its own facilities;
  - 2. Provide information satisfactory to the city manager or designee that the provider's obligations for its equipment in the public right-of-way or public easement or private property under this division have been lawfully assumed by another provider; or
  - 3. Submit to the city manager or designee a proposal and instruments for transferring ownership of its equipment to the city. If a provider proceeds under this clause, the city may, at its option:
    - a. Assume ownership of the equipment with a \$10.00 nominal consideration, or
    - b. Require the provider, at its own expense, to remove the equipment, or
    - c. Require the provider to post a bond in an amount sufficient to reimburse the city for reasonably anticipated costs to be incurred in removing the equipment. Equipment of a provider who fails to comply with the preceding paragraph and which, for 12 months, remains unused shall be deemed to be abandoned. Abandoned equipment is deemed to be a nuisance. The city may exercise any remedies or rights it has at law or in equity, including, but not limited to (i) abating the nuisance, (ii) taking possession of the equipment and restoring it to a useable condition, or (iii) requiring removal of the equipment by the provider or by the provider's surety under the bond required by section 28-1636 herein. Telecommunications towers being utilized for other purposes, including but not limited to light standards and power poles, may be exempted from this provision.
- (r) Accessory buildings or structures. All accessory buildings or structures shall meet all building design standards as listed in this Code, and in accordance with the provisions of the state building code. All accessory buildings or structures shall require a building permit issued by the building division and/or city manager or designee.
- (s) Colors. Except where superseded by the requirements of other county, state, or federal regulatory agencies possessing jurisdiction over telecommunications towers, telecommunications towers shall be painted or constructed in neutral colors, designed to blend into the surrounding environment such as non-contrasting gray, earth tones of appropriate shades of green, or such other colors as determined by the community appearance board.
- (t) In the event a hurricane or any other weather warning is issued by the National Weather Service that may impact wireless communications facilities in the city, the city manager or designee may order a service provider to temporarily lower or secure, as applicable and feasible, any temporary, portable, or partially constructed wireless communications facilities until such time as the warning is canceled.

(Ord. No. 5095, § 4, 7-28-09)

**Sec. 28-1633. - Standards for antennas.**

- (1) Minimum standards. Except where a modification to the wireless communications facilities development standards of this section is granted by the city council, every antenna must meet the following minimum standards.
  - (a) Antennas on existing structures shall be permitted as an accessory use in all preferred zoning districts except in the residential zoning districts. Notwithstanding the foregoing, stealth antennas shall be permitted as an accessory use on approved residential structures 50 feet in height or greater and non-stealth antennas shall be permitted as an accessory use on approved residential structures 100 feet in height or greater. Antennas on existing structures shall be subject to the procedures and requirements provided elsewhere in this chapter, and as follows:
    1. No commercial advertising shall be allowed on an antenna;
    2. No signals, lights, or illumination shall be permitted on an antenna, unless required by the Federal Communications Commission or the Federal Aviation Administration;
    3. Any related unstaffed equipment building shall not contain more than 250 square feet of gross floor area but may be up to 400 square feet in gross floor area if the city approves placement of a generator within such equipment facility, but should not be more than ten feet in height;
    4. If the equipment facility is located on the roof of the building, the area of each equipment facility shall not occupy more than 25 percent of the total roof area;
    5. Non-stealth antennas and all equipment buildings shall be set back a minimum of 20 feet from the edge of the building or rooftop, located or screened to minimize the visual impact of the antenna upon adjacent properties and shall be of a material or color which matches the exterior of the building or structure upon which it is situated; and
    6. Antennas shall only be permitted on non-residential buildings which are at least 50 feet tall. Antennas may be placed on buildings less than 50 feet tall if the city manager or designee determines that public safety needs warrant the antenna.
  - (b) Stealth antennas may not extend more than 20 feet above highest point of a roof. Stealth antennas attached to but not above rooftop structures shall be exempt from this provision. Stealth antennas may exceed 20 feet above the roof if the city manager or designee determines that public safety needs warrant such additional height.
  - (c) Non-stealth antennas may not extend more than ten feet above highest point of a roof. Non-stealth antennas attached to but not above rooftop structures shall be exempt from this provision. Non-stealth antennas may exceed ten feet above the roof if the city manager or designee determines that public safety needs warrant additional height.
- (2) Antenna types. To minimize adverse visual impacts, stealth antenna types shall be preferred. If a non-stealth antenna is proposed, the application shall be required to demonstrate, in a technical manner acceptable to the city, why the stealth antenna (i.e. An antenna incorporated into the architecture of the building or fully screened from view from sites proximate to the antenna) cannot be used for the particular application. This does not preclude a combination of the various types of antenna.
- (3) Antenna dimensions. A statement shall be submitted, prepared by a registered professional engineer licensed to practice in the state, and competent to evaluate antenna choices, to certify the need for the required dimensions.
  - (a) Whip (omni-directional) antennas and their supports must not exceed 15 feet in height and three inches in diameter and must be constructed of a material or color which matches the exterior of the building.
  - (b) Microwave dish antennas located below 65 feet above the ground may not exceed six feet in diameter. Microwave dish antennas located 65 feet and higher above the ground may not exceed eight feet in diameter. Ground-mounted dish antennas must be located or screened so as not to be visible from abutting public streets or adjacent properties.
  - (c) No more than five dish antennas shall be installed on a monopole tower.
- (4) Aircraft hazard. Prior to the issuance of a permit by the city, the application shall provide evidence that the telecommunications tower or antenna is in compliance with FAA regulations. Where an antenna will not exceed the highest point of the existing structure upon which it is to be mounted, such evidence

shall not be required.  
(Ord. No. 5095, § 4, 7-28-09)

**Sec. 28-1634. - Use of public rights-of-way.**

- (1) No telecommunications towers or equipment facilities may be installed or placed in the ROW, with the exception that a stealth antenna may be placed on any pole that has already been installed or placed in the ROW, with the consent of the pole owner, subject to the standards in this section.
- (2) Development standards.
  - (a) Any stealth antenna to be installed in the ROW, including any accompanying equipment facilities, shall be subject to all requirements of this division and all site plan review and permitting requirements of the city.
  - (b) When installing a stealth antenna on a pole, any and all associated equipment facilities shall be placed in any of the following areas:
    1. Underground in the ROW; or
    2. On an adjacent property, with the consent of the property owner provided that all the wiring is underground and all setback requirements are met.
    3. Above ground flush-mounted on the pole, provided the equipment facilities do not exceed the diameter or width of the pole at point of mounting, subject to review and approval by the community appearance board.
  - (c) Before installing any stealth antenna on any pole already installed in the ROW, an applicant must complete the antenna application pursuant to this chapter and must also comply with the other applicable sections of this chapter. An application pursuant to this section shall not be deemed a collocation application.
  - (d) No antenna may be installed under this section until the applicant fully complies with all the indemnification and insurance requirements of this chapter.
  - (e) A stealth antenna may be mounted on an existing pole in the ROW with the consent of the pole owner, provided the height of the stealth antenna does not extend more than 12 feet above the top of such pole. An existing pole may be modified, replaced or rebuilt to accommodate a stealth antenna so long as the height of such pole is not increased by more than 12 feet from its existing height.

(Ord. No. 5095, § 4, 7-28-09)

**Sec. 28-1635. - Replacement or modification of a wireless communications facility.**

- (1) A telecommunications tower that is modified or reconstructed to accommodate the collocation of an additional antenna shall be of the same telecommunications tower type as the existing telecommunications tower, unless the city allows reconstruction as a monopole pursuant to this section.
- (2) An existing telecommunications tower may be modified or rebuilt to a taller height to accommodate an additional antenna. Such modification or rebuild of the telecommunications tower shall require the approval of the city council. The new height shall comply with the requirements of this chapter.
- (3) A telecommunications tower that is being rebuilt to accommodate an additional antenna and which requires movement onsite from its existing location shall require an application for a new tower. After the telecommunications tower is rebuilt to accommodate collocation, only one telecommunications tower may remain on the site. A relocated onsite telecommunications tower shall continue to be measured from the original telecommunications tower location for purposes of calculating separation distances between towers pursuant to this section. The relocation of a telecommunications tower pursuant to this section shall not be deemed to cause a violation of the separation requirements contained herein.
- (4) Modification of existing wireless communications facility. Minor modification of a wireless communications facility shall not require an additional approval so long as the modification does not change the height of the telecommunications tower, enlarge the antenna array, enlarge the equipment facility and does not involve any collocation. All other modifications shall require approval pursuant to the requirements of this division.
- (5) Any pre-existing tower, including a nonconforming tower, may be structurally modified to permit

of such insurance, a renewed certificate of insurance as proof that equal and like coverage for the balance of the period.

- (3) Comprehensive general liability. A wireless communications facility operator and its contractors or subcontractors engaged in work on the operator's behalf, shall maintain adequate insurance to cover liability, bodily injury and property damage in the minimum amount of \$1,000,000 or in such greater amount as reasonably determined by the city at the time of application. Exposures to be covered include premises, operations, and those certain contracts relating to the construction, installation or maintenance of the wireless communications facility. Coverage shall be written on an occurrence basis. Certificates of insurance reflecting evidence of the required insurance shall be filed with the city.
- (4) Prior to any construction on city-owned property, every service provider, shall establish a cash security fund, or provide the city with an irrevocable letter of credit subject to the city attorney's approval, in the amount specified in an agreement, permit, or other authorization as necessary to ensure the provider's faithful performance of construction and compliance with this division. The minimum amount of the security fund for each telecommunications tower shall be \$25,000.00 and the minimum amount for each antenna shall be \$5,000.00.
- (5) In the alternative, at the city's discretion, a service provider may, in lieu of a cash security fund or letter of credit, file and maintain with the city a bond in the same amounts as required in subsection (1). The provider and the surety shall be jointly and severally liable under the terms of the bond. The bond shall be issued by a surety having a minimum rating of A-1 in Best's Key Rating Guide, Property/Casualty Edition; shall be subject to the approval of the city attorney; and shall provide that: "This bond may not be canceled, or allowed to lapse, until 60 days after receipt by the city, by certified mail, return receipt requested, of a written notice from the issuer of the bond of intent to cancel or not to renew."
- (6) The rights reserved by the city with respect to any security fund or bond established pursuant to this section are in addition to all other rights and remedies the city may have under this division, a lease, or at law or equity.
- (7) Any person, firm or corporation who knowingly breaches any provision of this division shall upon receipt of written notice from the city be given a time schedule to cure the violation. Failure to commence to cure the violation within 30 days and to complete cure, to the city's satisfaction, within 60 days, or such longer time as the city may specify, shall result in revocation of any permit or license and the city shall seek any remedy or damages to the full extent of the law. This shall not preclude other penalties allowed by law.
- (8) Violations.
  - (a) In addition to revoking any permit for placement of a wireless communications facilities in the city for violation of this chapter and any other remedies available at law including, but not limited to F.S. § 166.0415 and F.S. ch. 162, or at equity or as provided in this chapter, the city may apply any one or combination of the following remedies in the event an applicant or service provider violates this chapter, or applicable local law or order related to placement of such facilities in the city:
    1. Failure to comply with the provisions of this chapter or other applicable law may result in imposition of penalties to be paid by the applicant or service provider to the city as provided in F.S. ch. 162, and the City Code, as they may be amended.
    2. In addition to or instead of any other remedy, the city may seek legal or equitable relief from any court of competent jurisdiction.
  - (b) No waiver. Failure of the city to enforce any requirements of this chapter shall not constitute a waiver of the city's right to enforce that violation or subsequent violations of the same type or to seek appropriate enforcement remedies.

(Ord. No. 5095, § 4, 7-28-09)

**Secs. 28-1637—28-1645. - Reserved.**

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**FOOTNOTE(S):**

<sup>(178)</sup> **Editor's note**— Ord. No. 5095, §§ 3 and 4, adopted July 28, 2009, amended the Code by repealing former div. 13, §§ 28-1622—28-1645, in its entirety, and adding a new div. 13. Former div. 13 pertained to telecommunications towers and facilities, and derived from Ord. No. 4420, adopted January 26, 1999. (Back)





shall not be required.  
(Ord. No. 5095, § 4, 7-28-09)

**Sec. 28-1634. - Use of public rights-of-way.**

- (1) No telecommunications towers or equipment facilities may be installed or placed in the ROW, with the exception that a stealth antenna may be placed on any pole that has already been installed or placed in the ROW, with the consent of the pole owner, subject to the standards in this section.
- (2) Development standards.
  - (a) Any stealth antenna to be installed in the ROW, including any accompanying equipment facilities, shall be subject to all requirements of this division and all site plan review and permitting requirements of the city.
  - (b) When installing a stealth antenna on a pole, any and all associated equipment facilities shall be placed in any of the following areas:
    1. Underground in the ROW; or
    2. On an adjacent property, with the consent of the property owner provided that all the wiring is underground and all setback requirements are met.
    3. Above ground flush-mounted on the pole, provided the equipment facilities do not exceed the diameter or width of the pole at point of mounting, subject to review and approval by

collocation or may be replaced through no more than administrative review and building-permit review, and is not subject to public hearing review, if the overall height of the tower is not increased and, if the replacement tower is a monopole tower or, if the pre-existing tower is a stealth tower, the replacement tower is a similar stealth tower.

- (6) Rebuilding damaged or destroyed nonconforming towers or antennas. Legal nonconforming telecommunications towers or antennas that are damaged or destroyed may be rebuilt subject to the provisions of this division. Building permits to rebuild the facility shall comply with the then applicable building codes and shall be obtained within 180 calendar days from the date the facility is damaged or destroyed. If no permit is obtained or if the permit expires, the telecommunications tower or antenna shall be deemed abandoned as specified in section 28-1632 herein.

(Ord. No. 5095, § 4, 7-28-09)

#### **Sec. 28-1636. - Indemnification, insurance, security funds, and violations.**

- (1) **Indemnification.** The city shall not enter into any lease agreement with any provider for the use of city owned property for installation of wireless communications facilities until and unless the city obtains an adequate indemnity from such provider. The indemnity must at least:
- (a) Release the city from and against any and all liability and responsibility in or arising out of the construction, operation or repair of the wireless communications facility.
  - (b) Indemnify and hold harmless the city, its trustees, elected and appointed officers, agents, servants and employees, from and against any and all claims, demands, or causes of action of whatsoever kind or nature, and the resulting losses, costs, expenses, reasonable attorneys' fees, liabilities, damages, orders, judgments, or decrees, sustained by the city or any third party arising out of, or by reason of, or resulting from or of each wireless communications facility operator, or its agents, employees, or servants negligent acts, errors, or omissions.
  - (c) Provide that the covenants and representations relating to the indemnification provision shall survive following the term of any agreement and continue in full force and effect for at least one year following the termination of the party's agreement as to the party's responsibility to indemnify.
  - (d) In no event shall the city indemnify a service provider and/or the owner or operator of a wireless communications facility.
- (2) **Insurance.** The city shall not grant or approve an application for the installation of a tower, antenna and/or wireless communications facility on city-owned property and shall not enter into any lease agreement for city owned property until and unless the city obtains assurance that such applicant or lessee (and those acting on its behalf) has adequate insurance. At a minimum, the following requirements must be satisfied:
- (a) A wireless communications facility owner shall not commence construction or operation of the facility without obtaining all insurance required under this section and approval of such insurance by the city manager, nor shall a wireless communications facility operator allow any contractor or subcontractor to commence work on its contract or sub-contract until all similar such insurance required of the same has been obtained and approved. The required insurance must be obtained and maintained for the entire period the wireless communications facility is in existence. If the operator, its contractors or subcontractors do not have the required insurance, the city may order such entities to stop operations until the insurance is obtained and approved.
  - (b) Certificates of insurance, reflecting evidence of the required insurance, shall be filed with the city. For entities that are entering the market, the certificates shall be filed prior to the commencement of construction and once a year thereafter, and as provided below in the event of a lapse in coverage.
  - (c) These certificates shall contain a provision that coverage afforded under these policies will not be canceled until at least 30 days prior written notice has been given to the city. Policies shall be issued by companies authorized to do business under the laws of the state. The city may amend its requirements pertaining to insurance from time to time and may require additional provisions pertaining to such insurance in a lease.
  - (d) In the event that the insurance certificate provided indicates that the insurance shall terminate or lapse during the period of the lease agreement with the city, then in that event, the wireless communications facility operator shall furnish, at least 30 days prior to the expiration of the date

of such insurance, a renewed certificate of insurance as proof that equal and like coverage for the balance of the period.

- (3) Comprehensive general liability. A wireless communications facility operator and its contractors or subcontractors engaged in work on the operator's behalf, shall maintain adequate insurance to cover liability, bodily injury and property damage in the minimum amount of \$1,000,000 or in such greater amount as reasonably determined by the city at the time of application. Exposures to be covered include premises, operations, and those certain contracts relating to the construction, installation or maintenance of the wireless communications facility. Coverage shall be written on an occurrence basis. Certificates of insurance reflecting evidence of the required insurance shall be filed with the city.
- (4) Prior to any construction on city-owned property, every service provider, shall establish a cash security fund, or provide the city with an irrevocable letter of credit subject to the city attorney's approval, in the amount specified in an agreement, permit, or other authorization as necessary to ensure the provider's faithful performance of construction and compliance with this division. The minimum amount of the security fund for each telecommunications tower shall be \$25,000.00 and the minimum amount for each antenna shall be \$5,000.00.
- (5) In the alternative, at the city's discretion, a service provider may, in lieu of a cash security fund or letter of credit, file and maintain with the city a bond in the same amounts as required in subsection (1). The provider and the surety shall be jointly and severally liable under the terms of the bond. The bond shall be issued by a surety having a minimum rating of A-1 in Best's Key Rating Guide, Property/Casualty Edition; shall be subject to the approval of the city attorney; and shall provide that: "This bond may not be canceled, or allowed to lapse, until 60 days after receipt by the city, by certified mail, return receipt requested, of a written notice from the issuer of the bond of intent to cancel or not to renew."
- (6) The rights reserved by the city with respect to any security fund or bond established pursuant to this section are in addition to all other rights and remedies the city may have under this division, a lease, or at law or equity.
- (7) Any person, firm or corporation who knowingly breaches any provision of this division shall upon receipt of written notice from the city be given a time schedule to cure the violation. Failure to commence to cure the violation within 30 days and to complete cure, to the city's satisfaction, within 60 days, or such longer time as the city may specify, shall result in revocation of any permit or license and the city shall seek any remedy or damages to the full extent of the law. This shall not preclude other penalties allowed by law.
- (8) Violations.
  - (a) In addition to revoking any permit for placement of a wireless communications facilities in the city for violation of this chapter and any other remedies available at law including, but not limited to F.S. § 166.0415 and F.S. ch. 162, or at equity or as provided in this chapter, the city may apply any one or combination of the following remedies in the event an applicant or service provider violates this chapter, or applicable local law or order related to placement of such facilities in the city:
    1. Failure to comply with the provisions of this chapter or other applicable law may result in imposition of penalties to be paid by the applicant or service provider to the city as provided in F.S. ch. 162, and the City Code, as they may be amended.
    2. In addition to or instead of any other remedy, the city may seek legal or equitable relief from any court of competent jurisdiction.
  - (b) No waiver. Failure of the city to enforce any requirements of this chapter shall not constitute a waiver of the city's right to enforce that violation or subsequent violations of the same type or to seek appropriate enforcement remedies.

(Ord. No. 5095, § 4, 7-28-09)

**Secs. 28-1637—28-1645. - Reserved.**

#### FOOTNOTE(S):

(178) **Editor's note**— Ord. No. 5095, §§ 3 and 4, adopted July 28, 2009, amended the Code by repealing former div. 13, §§ 28-1622—28-1645, in its entirety, and adding a new div. 13. Former div. 13 pertained to telecommunications towers and facilities, and derived from Ord. No. 4420, adopted January 26, 1999. (Back)

PORTLAND CITY COUNCIL  
COMMUNICATION REQUEST  
Wednesday Council Meeting 9:30 AM

Council Meeting Date: 8-31-11

AUDITOR 08/24/11 AM 9:56

Today's Date 8-24-11

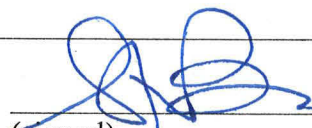
Name Stephen Backer

Address 4407 NE 31st Ave Portland, OR 97211

Telephone 503-962-0098 Email stevebacker@gmail.com

Reason for the request:

cell tower in residential priority 4 neighborhood,  
with no public notice

  
(signed)

- Give your request to the Council Clerk's office by Thursday at 5:00 pm to sign up for the following Wednesday Meeting. Holiday deadline schedule is Wednesday at 5:00 pm. (See contact information below.)
- You will be placed on the Wednesday Agenda as a "Communication." Communications are the first item on the Agenda and are taken promptly at 9:30 a.m. A total of five Communications may be scheduled. Individuals must schedule their own Communication.
- You will have 3 minutes to speak and may also submit written testimony before or at the meeting.

*Thank you for being an active participant in your City government.*

**Contact Information:**

Karla Moore-Love, City Council Clerk  
1221 SW 4th Ave, Room 140  
Portland, OR 97204-1900

(503) 823-4086 Fax (503) 823-4571

email: [Karla.Moore-Love@portlandoregon.gov](mailto:Karla.Moore-Love@portlandoregon.gov)

Sue Parsons, Council Clerk Assistant  
1221 SW 4th Ave., Room 140  
Portland, OR 97204-1900

(503) 823-4085 Fax (503) 823-4571

email: [Susan.Parsons@portlandoregon.gov](mailto:Susan.Parsons@portlandoregon.gov)

Request of Stephen Backer to address Council regarding cell tower in residential neighborhood with no public notice (Communication)

AUG 31 2011

**PLACED ON FILE**

Filed AUG 26 2011.

**LaVonne Griffin-Valade**  
Auditor of the City of Portland

By

COMMISSIONERS VOTED AS FOLLOWS:		
	YEAS	NAYS
1. Fritz		
2. Fish		
3. Saltzman		
4. Leonard		
Adams		