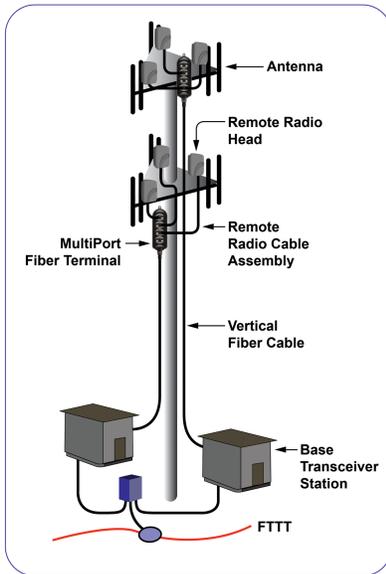


# FREQUENTLY ASKED QUESTIONS ABOUT WIRELESS TELECOMMUNICATIONS FACILITIES (INCLUDING SMALLCELL SITES)



## Macro Wireless Facility

- Antenna(s)
- Equipment
- Connecting Cables
- Support Structure
- Power Source (Meter/Battery)
- Backhaul (wired or wireless)

## WHAT ARE "RADIOFREQUENCY" AND MICROWAVE RADIATION?

Electromagnetic radiation consists of waves of electric and magnetic energy moving together (*i.e.*, radiating) through space at the speed of light. Radio waves and microwaves emitted by transmitting antennas are one form of electromagnetic energy. They are collectively referred to as "radiofrequency" or "RF" energy or radiation.

The RF waves emanating from an antenna are generated by the movement of electrical charges in the antenna. Electromagnetic waves can be characterized by a wavelength and a frequency. The wavelength is the distance covered by one complete cycle of the electromagnetic wave, while the frequency is the number of electromagnetic waves passing a given point in one second. The frequency of an RF signal is usually expressed in terms of a unit called the "hertz" (abbreviated "Hz"). One Hz equals one cycle per second. One megahertz MHz equals one million cycles per second.

## CAN RF EMISSIONS CAUSE HEALTH PROBLEMS?

Some studies have also examined the possibility of health problems caused by RF exposure. Results to date have been inconclusive. While some experimental data have suggested a possible link between exposure and tumor formation in animals exposed under certain specific conditions, the results have not been independently replicated. Many other studies have failed to

find evidence for a link to cancer or any related condition.

## WHAT IS 5G WIRELESS? HOW IS IT DIFFERENT FROM 4G WIRELESS?

"4G" and "5G" are abbreviations for the 4<sup>th</sup> and 5<sup>th</sup> generations of wireless technology standards. The standards are differentiated by their performance capabilities – how much and how fast the data moves through the networks and the applications that the network can support. The most recent and significant shift is from 4G to 5G wireless technology. Unlike 4G technology, which primarily relies on larger "macro" antennas or cells to send and receive wireless signals at relatively low frequencies, 5G will generally operate on higher frequencies in the radio spectrum, with smaller and more numerous service areas, "cells," to allow the carrier to reuse the frequencies more efficiently and reduce the number of users attempting to access each cell. 5G has significantly faster data transmission rates than 4G and reduced "latency" or time lag between when a signal is sent and when it is received. The smaller facilities are also known as "small cells."

## WHERE CAN SMALL CELL WIRELESS FACILITIES BE LOCATED?

Small cell wireless facilities can be located in public rights-of-way and most are installed on existing or replacement structures, such as light poles. Given their smaller service area as compared to macro

wireless facilities, most small cells can service an area within approximately 500 to 1,000 feet. Small cells may also be placed on private property, but most carriers favor the public rights-of-way where they have additional rights under state law.



## **ARE WIRELESS TELECOMMUNICATIONS FACILITIES AND OTHER RADIO TOWERS LOCATED NEAR HOMES OR SCHOOLS SAFE FOR RESIDENTS AND STUDENTS?**

RF emissions from antennas used for cellular and PCS transmissions result in exposure levels on the ground that are typically thousands of times below safety limits. These safety limits were adopted by the Federal Communications Commission (FCC) based on the recommendations of expert organizations and endorsed by Federal health and safety agencies. Therefore, there is no reason to believe that such towers could constitute a potential health hazard to nearby residents or students.

## **CAN PEOPLE BE EXPOSED TO LEVELS OF RF EMISSIONS THAT COULD BE HARMFUL?**

Studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature.

## **DOES THE FCC ROUTINELY MONITOR RF EMISSIONS FROM ANTENNAS?**

The FCC does not have the resources or the personnel to routinely monitor the exposure levels due at all of the thousands of transmitters that are subject to FCC jurisdiction. However, while there are large variations in exposure levels in the environment of fixed transmitting antennas, it is exceedingly rare for exposure levels to approach FCC public exposure limits in accessible locations. In addition, the FCC does not routinely perform RF exposure investigations unless there is a reasonable expectation that the FCC exposure limits may be exceeded.

## **CAN LOCAL AND STATE GOVERNMENTAL BODIES ESTABLISH LIMITS FOR RF EXPOSURE?**

The Federal Telecommunications Act of 1996 contained provisions relating to federal jurisdiction to regulate human exposure to RF emissions from certain transmitting devices. 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."

## **CAN THE CITY OF REDLANDS SIMPLY REFUSE TO ALLOW ANY OF THESE FACILITIES WITHIN THE PUBLIC RIGHT-OF-WAY?**

No. The City cannot prohibit the placement of personal wireless telecommunications facilities in the public right-of-way. As regulated by the California Public Utilities Commission, the companies have the right to place their facilities in the right-of-way, subject to the City's reasonable time, place and manner rules (See City Municipal Code Chapter 18.178). Additionally, the Federal Telecommunications Act of 1996 prohibits the City from discriminating against wireless telecommunications providers or prohibiting such providers from providing wireless services within the City.

## **IS THE CITY CONSIDERING THE ADOPTION OF A COMPREHENSIVE ORDINANCE REGULATING WIRELESS TELECOMMUNICATIONS FACILITIES?**

Yes. City staff is preparing an ordinance regarding Wireless Telecommunications Facilities, for City Council consideration on July 16, 2019. The text of the proposed ordinance will be available as part of the agenda staff report and posted to the City's website no later than July 13, 2019.

## **WHY ARE CHANGES TO THE CITY'S WIRELESS REGULATIONS NEEDED?**

In September 2018 the FCC issued an order focused on "small wireless facilities" that are part of the shift from 4<sup>th</sup> Generation (4G) to 5<sup>th</sup> Generation (5G) wireless technology. The FCC order imposes new limits on state and local government authority to make decisions based on aesthetics, shortens review time frames even more than those currently in place, and establishes a new standard of review for courts that is more favorable to wireless providers who challenge local regulations. Updates to the City's regulations are presently begin made to make sure they are consistent with the FCC order, and, within those limits, guide the design and location of new small cell facilities in Redlands. Without compliant regulations, the City may not be able to regulate these deployments.

## **HOW DOES THE RADIO-FREQUENCY (RF) EXPOSURE FROM THESE ANTENNAS COMPARE TO THE RF OUTPUT FROM A MOBILE PHONE, BABY MONITOR, OR WI-FI ROUTER IN A PERSON'S HOME?**

RF exposure is highly dependent on factors such as distance and orientation from the antenna (being below or behind these antennas generates significantly lower RF exposure). Generally, any person within their home (even if on an upper story dwelling unit at the same level as the antenna), or at ground level would be subject to higher RF exposure levels from a cell phone in their hand (if they own one) than the RF exposure typically seen from these antennas. This is due to the distance between the antenna and any publicly accessible areas, as well as the orientation of the antennas. The antennas on steel poles are directional (meaning they have a specific beam pattern) so the RF exposure at a dwelling right behind the antenna is significantly lower than being directly in front of the antenna.

## **CAN POTENTIAL HEALTH EFFECTS PREVENT THESE INSTALLATIONS FROM BEING APPROVED?**

Under the Federal Telecommunications Act, the FCC completely occupies the field with respect to RF emissions regulation. The FCC established comprehensive rules for human exposure to RF emissions. Although the FCC requires all new and modified facilities to demonstrate compliance with the FCC guidelines prior to construction, the FCC does not require compliance testing at regular intervals

thereafter. The FCC requires all applications to include a written statement that the proposed emissions will be compliant, may require that the applicant provide a theoretical model and technical data to support the certification and, in some cases, may require the applicant to perform on-site field tests. State and local governments cannot regulate wireless facilities based on environmental effects from RF emissions to the extent that the emissions comply with the FCC guidelines. State and local governments may require applicants to demonstrate compliance with the FCC guidelines, but they cannot establish compliance requirements that differ from the FCC guidelines.

Questions regarding potential RF hazards from FCC-regulated transmitters can be directed to the Federal Communications Commission, Consumer & Governmental Affairs Bureau, 445 12<sup>th</sup> St., S.W., Washington, DC 20554; phone 1-888-225-5322 (1-888-CALL-FCC); e-mail [rf\\_safety@fcc.gov](mailto:rf_safety@fcc.gov). Concerns that a facility is not in compliance with FCC guidelines can be reported to the FCC's Enforcement Bureau, 445 12<sup>th</sup> St., S.W., 3<sup>rd</sup> floor, Washington, DC 20554; phone: (202) 418-7450.

## WHICH COMPANIES ARE PROPOSING TO ADD WIRELESS ANTENNAS?

Various carriers may propose facilities. The proposals may include systems operated by Verizon Wireless, ATT&T, and Crown Castle, among others.

## WHERE CAN I OBTAIN MORE INFORMATION ON POTENTIAL HEALTH EFFECTS OF RF ENERGY?

- **FDA:** The Food and Drug Administration's Cell phone website: <https://www.fda.gov/radiation-emitting-products/radiation-emitting-products-and-procedures/home-business-and-entertainment-products>
  - Topics include: Wireless medical devices, General Electronic Product Radiation Control, FDA regulations that apply to manufacturers of electronic products
- **EPA:** The Environmental Protection Agency's overview of power-line emissions: <https://www.epa.gov/radiation/where-can-i-find-information-about-living-near-cell-phone-tower>
  - Topics include: Cell phone tower safety
- **NIOSH:** The National Institute for Occupational Safety and Health: <https://www.cdc.gov/niosh/topics/emf/>
  - Research on protecting workers from proven and possible EMF (electric and magnetic fields) health risks focusing on RF (radiofrequencies), ELF (extremely low frequencies) and Static magnetic fields:
- **NCI:** The National Cancer Institute's Fact sheets on potential risks from exposure to:
  - Magnetic fields: <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet?redirect=true>
  - Cell phones: <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>
- **NIHES:** The National Institute of Environmental Health Sciences
  - Electric and magnetic fields and potential health effects: <http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm>
- **NTP:** The National Toxicology Program
  - Test the biological effects of cellphones (GSM): <http://ntp.niehs.nih.gov/testing/status/agents/ts-08013.html>
  - Test the biological effects of cellphones (CDMA): <http://ntp.niehs.nih.gov/testing/status/agents/ts-08015.html>

- **FCC:** Federal Communications Commission
  - General information on RF exposure is found on the FCC's Office of Engineering and Technology
  - (OET) web page at: <https://www.fcc.gov/general/radio-frequency-safety-0>
  - Information on wireless devices and health concerns can be found at: <https://www.fcc.gov/consumers/guides/wireless-devices-and-health-concerns>
  - Information specific to fixed antenna structures can be found at <https://www.fcc.gov/general/tower-and-antenna-siting>