



**CUPERTINO**

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**PUBLIC WORKS DEPARTMENT**

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## Frequently Asked Questions about Wireless Facilities on Wooden Utility Poles and Streetlight Poles

### **1. What is a small cell facility?**

A “small cell” facility, sometimes called a “node,” is typically installed on poles in the public right-of-way. It is intended to cover a small area, often just a few blocks, to provide additional service in areas where signal levels from the carrier’s large “macro” base stations (typically sited on a tall tower or building) may be weak and/or limited by high demand. Small cells on utility poles will typically consist of an antenna(e) mounted on top of the pole and a number of small boxes consisting of radios, electric meter, a disconnect switch placed on the pole closer to the base. Small cells on streetlights will typically consist of an antenna(e), similar to that of utility poles, and an electric meter mounted on top of the pole within a shroud to ensure aesthetic qualities of the facilities. Two small radio boxes may be placed on the pole further down, or within the base of the pole. Small cell facilities will help wireless service providers in meeting the continuously increasing demand for wireless services. The increased use of smart phones, tablets, health monitors and other wireless devices in every-day life relies on a robust wireless network. A small cell network adds capacity and improves in-building coverage in Cupertino neighborhoods. Small cell networks will improve voice quality, reliability and data speeds for Cupertino residents, businesses, first responders and visitors using the wireless networks.

### **2. What is the range of these systems?**

Several factors dictate the range of small cells, including objects that can potentially block the signals such as trees or buildings. On average, these systems have an approximate range of just a couple of blocks, due to their mounting height, low power output, and existing physical objects that may interfere with cellular signals. For comparison purposes, a typical “macro” facility, with higher power usage (e.g. 10,000+ watts), and a higher mounting location; can have a range of a few miles.

**3. Can the City prohibit the installation of wireless facilities on my block? No.**

Under State law, telecommunications carriers have a right to install wireless facilities in the public right-of-way and on wood utility poles. The City, however, can regulate certain aspects of the design, location, and placement of those facilities

**4. Does the City prefer wireless facilities on wood poles? No.**

Our preference is for wireless carriers to work with the community, and the Public Works Department on well designed and scale-appropriate steel streetlight poles. Steel poles are generally less visually intrusive than wood pole-mounted facilities, since much of the equipment can be screened and wiring can be concealed inside of the pole.

**5. Why do we need small cells when we already have macro cell towers?**

Despite their similarities, what differentiates Small Cells from Macrocells is that small cells are typically used for addressing capacity concerns and macrocells are for addressing coverage concerns. In urban areas you will commonly find small cells used to create a cellular network that can cope with the high capacity demand that macrocells cannot manage.

**6. What is the difference between ionizing and non-ionizing radiation?**

The United States Food and Drug Administration (FDA) states that generally, when people hear the word *radiation*, they're thinking of *ionizing radiation*, like X-rays and gamma rays. Ionizing radiation carries enough energy to break chemical bonds, knock electrons out of atoms, and cause direct damage to cells in organic matter. In fact, ionizing radiation carries *more than a billion times more energy* than does non-ionizing radiation. A little ionizing radiation can be used to produce x-ray images for diagnosis. A lot of ionizing radiation is needed to kill cancer cells in radiation therapy.

By contrast, non-ionizing radiation does not have enough energy to break chemical bonds or strip electrons from atoms. Scientific consensus shows that non-ionizing radiation is not a carcinogen and, at or below the radio frequency exposure limits set by the FCC, non-ionizing radiation has not been shown to cause any harm to people. **Cell phones emit low levels of non-ionizing radiation while in use.** The type of radiation emitted by cell phones is also referred to as radio frequency (RF) energy. <https://www.fda.gov/radiation-emitting-products/cell-phones/radio-frequency-radiation-and-cell-phones>

#### 7. Are small cells safe?

The World Health Organization (WHO) states "...that in the area of biological effects and medical applications of non-ionizing radiation approximately 25,000 articles have been published over the past 30 years. Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. However, some gaps in knowledge about biological effects exist and need further research."

WHO Fact Sheet: <https://www.who.int/en/news-room/fact-sheets/detail/electromagnetic-fields-and-public-health-mobile-phones>

Further information on Electromagnetic Fields (EMF) can be found at: <https://www.who.int/peh-emf/about/WhatisEMF/en/>

The Federal Communications Commission (FCC), in consultation with numerous other federal agencies, including the Environmental Protection Agency, the Food and Drug Administration, and the Occupational Safety and Health Administration, has developed safety standards. The standards were developed by expert scientists and engineers after extensive reviews of the scientific literature related to radio frequency (RF) and biological effects. The FCC explains that its standards "incorporate prudent margins of safety" (a factor of safety of 50: <https://www.who.int/peh-emf/about/WhatisEMF/en/index4.html>). It explains further that "radio frequency 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." The FCC provides information about the safety of RF emissions from cellular base stations on its website at:

<http://www.fcc.gov/oet/rfsafety/rf-faqs.html>.

Additional information can be obtained from the American Cancer Society at: <https://www.cancer.org/cancer/cancer-causes/radiation-exposure/cellular-phone-towers.html> .

In general, due to their small size, low power output and limited coverage area, emissions from small cells are a small fraction of FCC-permitted levels in any publicly accessible area.

**8. Does the City's permit review address health concerns? Only in part.**

Under federal law (1996 Telecommunications Act), the City is prohibited from denying a permit to construct a wireless facility based on health concerns over RF emissions, provided that the emissions from the facility comply with Federal Communications Commission (FCC) standards. In order to assure compliance with FCC standards, the Department of Public Works (DPW) reviews every application for a small cell facility and requires field tests for each facility.

After a facility is approved and installed, field testing is required to be performed to ensure the facility meets the FCC's standards. Residents within 100-feet of the facility will be notified of the date that testing is scheduled to occur and can ask for testing of their dwelling units at no charge by contacting the Department of Public Works. Testing of dwelling units will occur only on the scheduled date, and wireless applicants will not be required to revisit a site for further testing of dwelling units after the initial testing has occurred. Testing may also be required when a permit is renewed, or when a site is modified (replacing/adding antennas or equipment), if the modifications may affect the antenna(s) output. The applicant will be required to file a report of their field test results with the City's Public Works Department.

Thus far, installations of small cell facilities on streetlights have been measured well below the RF emissions limits set by the FCC.

**9. The field test report will indicate the RF exposure level at ground level. Does the Field Test report take into account the RF exposure level on upper stories of residences closer to the antenna?**

A field test report will take into account the location, orientation, and output of the antenna, relative to the nearest publicly accessible areas, such as balconies, roof decks, and nearby dwellings (including upper stories), and the tester will use a bucket truck to measure the exposure levels directly at the antennas. The RF emissions at any publicly accessible area must also comply with the standards set by the Federal Communications Commission (FCC). Field testing can be arranged at no charge for residents, including from within their dwelling.

**10. 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 like distance and orientation from the antenna. 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 than the RF exposure typically seen from these antennas.

**11. How can I get more information about my health concerns?**

A copy of the field test report for each small cell wireless facility can be obtained from the Public Works Department. In addition, general information about the safety of wireless facilities can be found at:

The WHO: <https://www.who.int/peh-emf/about/WhatisEMF/en/>

The FDA: <https://www.fda.gov/radiation-emitting-products/cell-phones/radio-frequency-radiation-and-cell-phones>

The FCC: <https://www.fcc.gov/general/tower-and-antenna-siting>

**12. Is a permit required from the City? Yes.**

The Department of Public Works (DPW) issues permits for the installation of wireless facilities in the public right-of-way.

**13. Does the City's permit review address the design of the facility? Yes.**

The Department of Public Works works with each applicant for a wireless facility permit to consider a design that is appropriate for the proposed location. Each design is unique to its location. In addition, City staff continually engages with wireless carriers and equipment manufacturers to seek designs that are less visually intrusive. Residents are encouraged to discuss their concerns with the Public Works Department: Chad Mosley at [chadm@cupertino.org](mailto:chadm@cupertino.org)

**14. What does a typical small cell permit submittal look like?**

The following link provides an approved permit application and all of the associated documentation, including a copy of the final activation report which shows the post-construction field testing results:

<https://www.cupertino.org/home/showdocument?id=27637>

**15. Are these facilities subject to the California Environmental Quality Act or additional environmental review? No.**

Installation of small cell facilities on existing streetlight poles are categorically exempt from the California Environmental Quality Act (CEQA) pursuant to Sections 15302 and 15303 of the Guidelines for CEQA.

**16. Who owns the poles?**

Most wood utility poles in Cupertino are owned jointly by Pacific Gas and Electric (PG&E) and other utilities, such as telephone and cable TV, which have cables mounted on the poles; this also includes wireless carriers that have antennae on the poles.

The steel streetlight poles are typically owned and managed by the City of Cupertino.

**17. Does the City receive revenue from the use of wooden utility poles? No.**

But the City of Cupertino has worked with several carriers to establish agreements to allow the installation of wireless facilities on its (steel) streetlight poles. The City does receive annual payments for the use of its streetlight poles.

**18. Who do these facilities serve and what companies operate them?**

The wireless facilities installed on utility poles are primarily intended to serve customers of wireless carriers licensed by the FCC to operate in California, including AT&T, Mobilitie, Sprint, T-Mobile, and Verizon Wireless. These companies are authorized by the California Public Utilities Commission (CPUC) to install and operate the wireless facilities on wooden poles on behalf of their wireless carrier customers, but they still must obtain permits from DPW. The CPUC is a distinct State agency which regulates various utilities throughout California.

**19. How is this different from services such as Comcast, Sonic, or AT&T U-Verse/Gigapower?**

Those services primarily deliver “wired” internet, cable television and landline phone service without antennas. The proposed small cell facilities on poles in the right-of-way would provide wireless mobile voice and data coverage.

**20. Do the antennas generate noise?**

Some small cells have cooling fans within the equipment enclosures or at antennas that have built-in radios. These fans typically generate very little noise. If an existing system seems to be generating excessive noise, please contact the Department of Public Works at (408) 777-3345. In some instances, steps can be taken to reduce noise from cooling fans.

**21. Once DPW has issued a wireless permit can other carriers install additional facilities on the same pole?**

Generally, there will only be one wireless facility on each pole. CPUC regulations generally prohibit installing enough equipment on a utility pole to accommodate two separate wireless facilities. It is possible, however, that a pole could serve more than one carrier.

**22. Can carriers install new poles on my street to support their wireless facilities?**

PW will generally only allow new poles to replace existing poles. Pole replacements are typically needed to ensure the pole can handle the load of the equipment. In some instances, when the existing streetlight spacing is not consistent with the City's spacing guidelines, and the location is more preferred than other existing streetlight pole locations, DPW may allow for a new pole to be placed in order to fill the lighting gap.

**23. How long would construction take for a small cell facility?**

Generally, the installation of the antennas and equipment on the pole, and painting (if needed to match equipment to the pole) can be accomplished in a few days to a couple of weeks. Additional work may be required at the sidewalk level to connect power and fiber-optic cables (used to transmit signals) to the pole-mounted equipment and antennas.

**24. Is the City planning to underground the overhead facilities and remove the wood poles?**

There are currently two established underground districts within the City of Cupertino, where the overhead facilities are anticipated to be placed underground. The two areas encompass Stevens Creek Blvd, from Highway 85 to Byrne Avenue, and again along Stevens Creek Blvd, from Byrne Avenue to Janice Avenue. In the event the City establishes further underground districts, and construction efforts begin in an underground district, any

wireless carriers located on poles scheduled for removal would be required (as a condition of their utilities permit) to remove their facilities from the wooden poles. The Department of Public Works would then work with the carriers to new antennae on streetlight poles to reestablish service in the area.

**25. What equipment do wireless carriers typically install on poles?**

A typical wireless facility on a pole consists of one or more antennas and one or more equipment boxes. To meet CPUC requirements, the antennas will be mounted either at the top of the pole or on side arms midway down the pole. The equipment boxes will be attached to the pole, or in the case of new steel streetlight installations, potentially in the base of the pole itself. While every system varies, the equipment boxes typically include an electric meter, a disconnect switch, and computers to control the antennas. Some wireless facilities may also feature an equipment box, on the same pole or in a box near the pole, that contains batteries used to provide temporary emergency power to the facility in case of a power outage.

**26. Can carriers change the equipment they installed on a permitted wireless facility? Yes.**

Consistent with federal law, carriers are generally allowed to modify permitted wireless facilities, provided those modifications are within certain limits. These modifications require a City issued encroachment permit, and an updated Activation Report that shows the facility is operating within the FCC limits.

**27. Do other cities have these small cell systems? Yes.**

Wireless carriers have proposed similar networks in cities throughout the Bay Area, and beyond, such as San Francisco, San Jose, and San Diego, as well as other smaller communities throughout California and nearby, including Campbell, Mountain View, Palo Alto and Sunnyvale.

**28. Are there other cities that have “stopped” installations of small cells?**

It is not accurate to say that other cities have “stopped” installation of small cell facilities. Other cities that have been reported to “ban” small cells in residential zones but must allow for exceptions to the ban in order to comply with federal law. Some cities that have taken this approach, such as the Town of Los Altos, have been sued over these restrictions. Other cities that have taken similar approaches but who have not yet been sued, such as Mill Valley



and Petaluma, generally either have not yet received small cell applications or have not yet denied any small cell applications. Any local ordinance that effectively prohibits the provision of wireless service would be preempted by federal law.

**29. How can I be notified of any small cell permit application that is submitted to the City?**

The City has provided an e-notification system that will inform you via email of any small cell permit applications pass the initial submittal requirements.

To sign up for this notification, please visit the City's website here:

<https://www.cupertino.org/our-city/departments/public-works/permitting-development-services/small-cell-information>

**30. Can I see where all proposed, permitted and constructed small cell facilities are located within Cupertino? Yes**

The City has provided a web-based GIS map that shows where all proposed, permitted and constructed small cell facilities are located. The map also provides other relevant information including the wireless carrier and the locations of other wireless facilities (including macro-towers) within the City.

The GIS map can be accessed here:

<https://cupertino.maps.arcgis.com/apps/View/index.html?appid=db978690e1ed4ba2affd7be6b739745c>

**31. Where can I get further information on the City's permitting process for small cell facilities?**

Additional information, including the City's small cell encroachment permit requirements, guidelines and approved design standards, can be found on the Cupertino website here:

<https://www.cupertino.org/our-city/departments/public-works/permitting-development-services/small-cell-information>

**32. Who should I speak with regarding my concerns over the proposed installation of a wireless facility on my block?**

If you have received notice that a wireless facility is proposed to be installed on your block it means DPW has tentatively approved the application. City Staff reviews each application and works with the service providers to situate antennae in a location that provides the necessary services but poses as minimal a visual intrusion as possible. If you have concerns regarding the

facility, you are encouraged to discuss your concerns with the Public Works Department: Chad Mosley at [chadm@cupertino.org](mailto:chadm@cupertino.org).

**Common Terms associated with Small Wireless Facilities:**

**DAS** – Acronym for a Distributed Antenna System. A network of antennas and equipment enclosures usually attached to poles in the public right-of-way. Permits for facilities in the public right-of-way are administered by the Dept. of Public Works.

**“Macro” Wireless Telecommunication Services (WTS) Facility** - Typically three to sixteen panel antennas mounted on the roof of a building or on a cell tower, along with multiple equipment cabinets. Permits for “Macro” WTS are reviewed by the Planning Department, Fire Department, and the Building Department. They are also subject to the City’s Wireless Guidelines, and Planning Code.

**“Micro” Wireless Telecommunications Services (WTS) Facility** - Typically one or two antennas mounted on the roof of a building. Permits for “Micro” WTS are typically reviewed by the Planning Department, Fire Department, and the Building Department, and are subject to the City’s Wireless Guidelines and Planning Code.

**Public Right of Way (PROW)** – Typically refers to public streets and sidewalks, where light and utility poles are placed.

**Small Cells** – Are similar to DAS, though they have a different communications network architecture.