

## WHAT YOU NEED TO KNOW ABOUT 5G SMALL CELL WI-FI ANTENNAS

### The Bottom Line

**Q: I don't have very good cell phone coverage. Won't 5G small cell antennas make my wireless phone service better?**

**A:** No. 5G small cell antennas are designed for internet use only. They do not provide a stronger phone signal. What determines your phone signal strength is your relationship to the nearest macro-cell tower. (These are the big towers, which are designed to cover large distances. Small cell antennas have a very short range and are typically attached to existing infrastructures like streetlights, utility poles and buildings. As the industry manufacturers themselves state: "Data (*not phone coverage*) is king."

**Q: So what are 5G small cell antennas good for?**

**A:** 5G small cell wifi antennas were developed: (1) for people who want to download games or streaming video to their phones as fast as possible (in 20 seconds, say, as opposed to 4G technology's 90-120 seconds); (2) to facilitate the seemingly ever-expanding Internet of Things (including "smart" refrigerators, "smart" coffee makers, etc.); (3) to more precisely track your buying habits, places you visit, etc. in order to sell this data to other corporations.

**Q: Well, that sounds a little over-the-top but not too bad. What's wrong with wireless networks supporting these things?**

**A:** The problems lie in what the wireless networks don't talk about:

- Increased risks to human health and wildlife (especially wild birds and pollinators). (While all radiofrequency (RF) electromagnetic radiation may affect living species, the effects of 5G small cell radiation are amplified due to the sheer number and close range of these antennas in any habitable area. To learn more about specific health risks, and the numerous peer review studies on this subject, copy and paste this link in your browser: <https://ehtrust.org/health-effects-of-cell-towers-near-homes-and-schools/>)
- Decreased property values.
- "Aesthetic disaster" (according to the mayor of Palm Beach, CA, which successfully restricted the deployment of 5G small cell antennas).
- Increased risk of wildfire (due to the densification of small cell antennas: the more electrical equipment in a given area, the more that could potentially malfunction).

## The Details

### **Q: Yikes! Are all cell phone carriers building these 5G small cell antennas?**

**A:** Actually, carriers (like AT&T, Verizon, T-Mobile) don't build these small cell antennas themselves. They're built by site developers you've probably never heard of who then lease these antennas to the carriers. Site developers make money by building as many of these small cell antennas as quickly as they can. Because they don't have to deal with end users (us), quality control is often not very important.

### **Q: Aren't these 5G small cell antennas very unobtrusive?**

**A:** Here is what Environmental Health Trust ([ehtrust.org](http://ehtrust.org)) says on its website:

#### ***5G “small cell” antennas are anything but “small”***

“Small cell” is an industry term. It means a shorter cell tower close to homes and schools. Each “facility” will have transmitting wireless antennas and often ugly bulky equipment. A 2020 paper analyzed the radio frequency radiation environment that would result if a mmWave-based 5G network was fully deployed in Austin, Texas and found ambient radiation levels to be significantly increased. Examples of how and why “small cells” are not small:

- They increase electromagnetic radiation near homes.
- They have refrigerator-sized (and larger) equipment cabinets.
- Property values drop after a cell tower is built near homes.
- Taller and wider poles are needed for the antennas.

### **Q: What do insurance companies say about risks?**

**A:** In its 2019 *New Emerging Risks SONAR Report*, Swiss Re, the world's second largest secondary insurer (which insures large corporations and industries), classified 5G as a “High Impact Liability” risk. The report stated, “Existing concerns regarding potential negative health effects from electromagnetic fields (EMF) are only likely to increase. An uptick in liability claims could be a potential long-term consequence.” No insurance company will issue insurance to telecom companies for wireless radiation health damage claims because the RF-EMR (radio frequency-electromagnetic radiation) exposure far exceeds their risk models. As attorney Harry Lehmann, an expert in the field, said: “RF-EMR exposure isn't just a risk, it's a hazard. The difference is that a risk one can avoid, but one cannot avoid being saturated by this carcinogen, RF-EMR.” (And without having an extremely strong ordinance in place, the densification of 5G small cell antennas in our unincorporated neighborhoods and the concomitant health risks will get worse.)

## Human Health, Bees and Birds

**Q: Where can I read more about what scientific experts say on the dangers of 5G?**

**A:** You can find an extensive collection of scientific quotes at: <https://electromagnetichealth.org/quotes-from-experts/>

Remember that 5G small cell antennas require densification: aggregating a large number of these antennas in a small area amplifies the risks. Hundreds of scientists have evaluated the cell tower RF radiation exposure limits of the US Federal Communications Commission (FCC) and the International Commission for Non-ionizing Radiation Protection (ICNIRP) and found the limits are decades outdated and not protective to the health of the public, especially not the health of children.

Other peer-reviewed studies have demonstrated that exposure to radiofrequency radiation (RFR) – the kind emitted by 5G small cell antennas, as well as other wireless devices – can have significant adverse effects if they are closer to people than 500 meters (about 1,500'). Densification, of course, requires these small cell antennas to be significantly closer than that in order to work. Many scientists think this is not a risk worth taking.

*“Sufficient scientific evidence has accumulated to demonstrate the risk of adverse health effects to humans from exposure to RFR at permitted levels of exposure. Children and fetuses are especially at risk, as are insect species in the environment.”*

ENVIRONMENT: SCIENCE AND POLICY FOR SUSTAINABLE DEVELOPMENT  
2024, VOL. 66, NO. 2. *Applying the Precautionary Principle to Wireless Technology: Policy Dilemmas and Systemic Risks*  
(authors: Paul Ben Ishain, Hillel Z. Baldwin, Linda S. Birnbaum, Tom Butler, Kent Chamberlin, Devra L. Davis Theodora Scarato, and Hugh Taylor)

**Q: Speaking of insects, what about the effects of the densification of 5G small cell antennas in residential neighborhoods on wild birds and pollinators?**

**A:** Americans for Responsible Technology (ART) reports: “Scientists have found that insects like honeybees can be dramatically affected by high frequencies associated with 5G. These higher frequencies can raise the bee’s internal temperature, leading to changes in behavior and physiology, with unknown and unpredictable results.” ART also reports: “RF (radio frequency radiation) can disrupt the magnetic "compass" that many migrating birds and insects use, causing disorientation and possibly disrupting migration patterns.”

So, setting human health risks to the side for a moment, ask yourself if you’re willing to risk our honeybees and birds just so you can download a video game or streaming movie about 40-50 seconds faster than you can now. (Didn’t think so.)

## Protective Ordinances (And How to Make Marin County's Even Better)

**Q: Do any municipalities in and near Marin County have strong protective ordinances that have successfully stopped densification?**

**A:** To a greater or lesser extent, yes. Here are a few examples:

**Mill Valley** - no small cell antennas in residential areas.

**Fairfax** - includes strong tree protection. Requires annual RF testing to verify that actual radiation levels conform to FCC emission limits.

**Petaluma** - no small cell antennas within 500 feet of homes.

**Sonoma Town** - strong ordinance. City officials reasoned: "The lack of regulations that are specific to the siting of wireless telecommunications facilities in the public right-of-way combined with the Order's regulations to hasten the spread and development of small cell facilities would, if continued, jeopardize the health and safety of the public by allowing applications for small cell facilities to be submitted and subject to limited local siting regulations resulting from the implementation of the Order. (...) Thus, projects would be applied for and approved by law without local authority being properly, appropriately, and within the confines of federal and state laws exercised by the City, which would in turn result in potentially numerous wireless telecommunications facilities being constructed and existing without local controls for as long as the life of the facility."

**Q: Have non-municipal organizations been successful in blocking the deployment of 5G small cell antennas?**

**A:** Yes. In 2017 when 5G "small cells" were first coming into California, firefighter organizations came out in strong opposition to bill SB649, and it was [amended](#) to [exempt](#) their stations from the small cell deployment. Specifically, the unions successfully lobbied to get their fire stations carved out of state laws that would have forced cell towers onto fire stations.

**Q: Marin County has a protective ordinance called Title 22 that includes a specific section, Title 22.32.166, relating to small cell antenna facilities. Isn't this strong enough?**

**A:** To a large extent, this is a good ordinance. As everyone knows, though, the devil is in the details. For this reason a small group of concerned citizens took it upon themselves to raise the necessary funds to hire Andrew Campanelli, one of the foremost attorneys in the country specializing in wireless ordinances. To date, he has drafted numerous ordinances around the country, each one tailored to the specific needs and requirements of the municipality. About 70 percent of these are initiated by a city or county government; the remaining 30 percent are initiated, like ours, by a group of citizens. In our case, there will be no cost to the county. Speaking metaphorically, Mr. Campanelli observed during an initial meeting that Marin's current ordinance is like a big battleship whose hull is 90% built of the strongest and finest materials. But even if only 10% is poorly crafted, the ship will still sink when it's launched. These are the loopholes

we've hired Mr. Campanelli to address. What we want is a bullet-proof ordinance. Without this, the County remains vulnerable and will not be in a strong legal position to reject any site developer's application for multiple 5G small cell antennas wherever they want to build them throughout Marin.

**Q: What does a bullet-proof ordinance look like?**

**A:** About 1-1/2 years ago, Mr. Campanelli was hired by a local citizens group in Langley, Washington to draft a strict code for wireless antennas that would minimize adverse impacts on the community. The lead citizen behind the effort, Mark Wahl, put together a quick, successful pathway for informed citizens to achieve a state-of-the-art protective wireless code; it uses a fraction of the usual time, expense, and effort. This challenge-resistant code for the City of Langley, WA is now legally binding.

Following are a few top-level highlights and strategic features that protect both Langley residents and city government officials from any telecom industry court challenge. (Some may seem counterintuitive – but they work, which is why we've hired Mr. Campanelli to draft a similar ordinance that is specific to Marin County.)

1. No health aspects are mentioned in the code (because health risks are not an acceptable defense under the telecom ordinance of 1996) - yet it protects health.
2. The code indirectly screens out careless (or indiscriminate) placements (like residential utility poles) without trying to stop legitimate telecommerce. (An approach that would be thrown out in court.)
3. Setback restrictions and indemnification requirements use language that draws on successful legal precedents, making it easy for courts to rule in the city's favor.

You can read the in-depth analysis here: <https://ehtrust.org/new-wireless-code-for-langley-washington-state/>.

**Now it's our turn to make sure Marin County has the same protections in place as Langley, Washington. Please join us in helping empower our supervisors to take back local control of planning and safety from Big Wireless.**

Write a short email to your supervisor. (Email addresses follow.) If other than Supervisor Rodoni (District 4), please cc him on your email as Dennis is also president of the Board of Supervisors this year. Tell your supervisor you support the 5G small cell antenna ordinance drafted by attorney Andrew Campanelli, which will:

- Strengthen Marin County's existing Title 22 ordinance;
- Give County officials the tools they need to refute telecom industry lawsuit threats with confidence; and
- Responsibly protect Marin County residents, wildlife, and the environment, including the vulnerable, unspoiled charm of Marin's hidden villages, historic towns, rolling hills and agricultural lands we all cherish.

## Email addresses for Board of Supervisors

District 1: Mary Sackett ([mary.sackett@marincounty.gov](mailto:mary.sackett@marincounty.gov))

(Includes the majority of the City of San Rafael, and unincorporated Lucas Valley, Marinwood, and Santa Venetia)

District 2: Katie Rice ([katie.rice@marincounty.gov](mailto:katie.rice@marincounty.gov))

(Includes Fairfax, San Anselmo, Ross, Larkspur, southwest San Rafael, Kentfield, Greenbrae, Oak Manor, and Sleepy Hollow)

District 3: Stephanie Moulton-Peters ([stephanie.moultonpeters@marincounty.gov](mailto:stephanie.moultonpeters@marincounty.gov))

(Includes Sausalito, Floating Homes, Marin City, Tam Valley, Almonte, the majority of Mill Valley, Alto-Sutton Manor, Strawberry, Tiburon, and Belvedere)

District 4: Dennis Rodoni ([dennis.rodoni@marincounty.gov](mailto:dennis.rodoni@marincounty.gov))

(Includes Coastal West Marin – Muir Beach, Bolinas, Stinson Beach, Olema, Point Reyes Station, Inverness and Inverness Park, Marshall, Tomales, Dillon Beach; the inland rural corridor – Nicasio, Chileno Valley, San Geronimo Valley, and west Novato; and parts of east San Rafael, San Quentin, Corte Madera, Larkspur, and the unincorporated area of Mill Valley)

District 5: Eric Lucan ([eric.lucan@marincounty.gov](mailto:eric.lucan@marincounty.gov))

(Includes the majority of the City of Novato, and the unincorporated areas of Bel Marin Keys, Loma Verde, Black Point, Green Point, Rush Creek/Atherton Corridor, and Indian Valley)

You can also send a message to any supervisor or their aide online. Copy and paste the following address in your browser, then click on your district and supervisor's name.

<https://www.marincounty.gov/departments/board/about-board-supervisors>

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