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11 pages

Planning Commission
2850 Fairlane Court
Placerville, CA 95667

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PLANNING DEPARTMENT

October 6, 2016

RE: Public Comment for the Planning Commission Meeting of October 13, 2016 in regards to Special Use Permit S15-0013/Verizon Wireless Outingdale Communication Facility (Mono-Pine)

Dear Commissioners,

My family currently resides within 750 feet of the proposed project S15-0013. I would like to provide this public comment to the Planning Commission in support of this project.

Our home is currently unable to get internet access. Satellite internet is unavailable as we are at the bottom of a canyon. In today's day and age, children (including our children) are required to do homework via the internet and/or internet accessible apps. Our children rarely use books as their teachers provide them with a link to access all assignments which is mandatory, not requested by their teachers. Due to lack of internet at our home, we are required to spend endless hours in town before and after work and school to ensure our children are able to complete all mandatory homework to ensure their successes. With this proposed projects approval, we would be able to obtain internet via Verizon, or another co-carrier, directly from the comfort of our home.

I have read a previous comment discussing RF exposure and would like to remind everyone that this proposed project, as noted in Staff Report Exhibit H (see attached) the Executive Summary states "...The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy." Furthermore, I would like to note that the FCC Consumer Guide: Human Exposure to Radio Frequency Fields: Guidelines for Cellular and PCS Sites (see attached) states "the possibility that a member of the general public could be exposed to RF levels in excess of the FCC guidelines is extremely remote".

Finally, I would like to mention the importance of what overwatering oak trees can do. Please find attached an article titled, Maintaining Oak Tree Health, from the California Oak Mortality Task Force. This article discusses how oak "trees may be adversely effected by supplemental watering". I feel that fellow neighbors in our local area can determine when/if watering of trees is needed. At times, due to drought, we are not allowed to do any kind of outdoor watering. I think in the best interest of all, the current property owners should be allowed to determine if their trees actually need water and if so, to do it on their own accord. I feel that if regulations of watering are put into place, the potential for over-watering may occur which would ultimately cause more harm.

Respectfully Submitted,

The Saylors

Byron & Julie Saylor

Attachments:
Attachment 1: S15-0013, Staff Report Exhibit H
Attachment 2: FCC Consumer Guide: Human Exposure to Radio Frequency Fields: Guidelines for Cellular and PCS Sites
Attachment 3: Maintaining Oak Tree Health, from the California Oak Mortality Task Force

Verizon Wireless • Proposed Base Station (Site No. 295537 "Outingdale")
4620 Rancho Montes Drive • Placerville, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 295537 "Outingdale") proposed to be located at 4620 Rancho Montes Drive in Placerville, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install directional panel antennas on a tall pole, configured to resemble a pine tree, to be located at 4620 Rancho Montes Drive in Placerville. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–80 GHz	5.00 mW/cm^2	1.00 mW/cm^2
WiFi (and unlicensed uses)	2–6	5.00	1.00
BRS (Broadband Radio)	2,600 MHz	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

General Facility Requirements

Base stations typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky.

Exibit H

S15-0013

Attachment 1

Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including zoning drawings by SAC Wireless, LLC, dated May 6, 2015, it is proposed to install twelve Andrew Model SBNHH-1D65B directional panel antennas on a new 150-foot pole, configured to resemble a pine tree, to be located at 4620 Rancho Montes Drive in Placerville. The antennas would employ up to 4° downtilt, would be mounted at an effective height of about 141 feet above ground, and would be oriented in groups of three toward 10°T, 100°T, 190°T, and 280°T, to provide service in all directions. The maximum effective radiated power in any direction would be 6,680 watts, representing simultaneous operation at 4,620 watts for AWS and 2,060 watts for 700 MHz service; no operation on PCS or cellular frequencies is presently proposed from this site. Also proposed to be located on the pole are two microwave "dish" antennas, for interconnection of this site with others in the Verizon network. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation, including the contribution of the microwave antennas, is calculated to be 0.0012 mW/cm^2, which is 0.19% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building is 0.21% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

No Recommended Mitigation Measures

Due to their mounting location and height, the Verizon antennas would not be accessible to unauthorized persons, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. It is presumed that Verizon will, as an FCC licensee, take adequate steps to ensure that its employees or contractors receive appropriate training and comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the base station proposed by Verizon Wireless at 4620 Rancho Montes Drive in Placerville, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-20309, which expires on March 31, 2017. This work has been carried out under her direction, and all statements are true and correct of her own knowledge except, where noted, when data has been supplied by others, which data she believes to be correct.

Andrea L. Bright, P.E.
707/996-5200

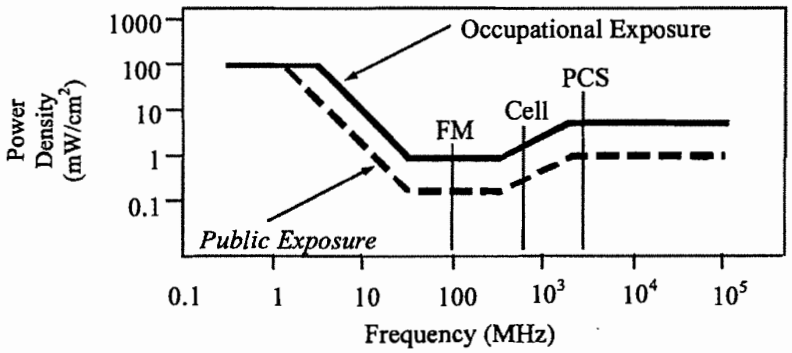
July 21, 2015

FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency	Electromagnetic Fields (f is frequency of emission in MHz)					
Applicable Range (MHz)	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm^2)	
0.3 – 1.34	614	*614*	1.63	*1.63*	100	*100*
1.34 – 3.0	614	*823.8/f*	1.63	*2.19/f*	100	*180/f^2*
3.0 – 30	1842/ f	*823.8/f*	4.89/ f	*2.19/f*	900/ f^2	*180/f^2*
30 – 300	61.4	*27.5*	0.163	*0.0729*	1.0	*0.2*
300 – 1,500	$3.54\sqrt{f}$	*$1.59\sqrt{f}$*	$\sqrt{f}/106$	*$\sqrt{f}/238$*	f/300	*f/1500*
1,500 – 100,000	137	*61.4*	0.364	*0.163*	5.0	*1.0*



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm^2,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm^2,

where θ_{BW} = half-power beamwidth of the antenna, in degrees, and
P_{net} = net power input to the antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of the antenna, in meters, and
η = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$$\text{power density } S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in } mW/cm^2,$$

where ERP = total ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, and
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

Consumer Guide

Human Exposure to Radio Frequency Fields: Guidelines for Cellular and PCS Sites

Primary antennas for transmitting wireless telephone service, including cellular and Personal Communications Service (PCS), are usually located outdoors on towers, water tanks and other elevated structures like rooftops and sides of buildings. The combination of antenna towers and associated electronic equipment is referred to as a "cellular or PCS cell site" or "base station." Cellular or PCS cell site towers are typically 50-200 feet high. Antennas are usually arranged in groups of three, with one antenna in each group used to transmit signals to mobile units, and the other two antennas used to receive signals from mobile units.

At a cell site, the total radio frequency (RF) power that can be transmitted from each transmitting antenna depends on the number of radio channels (transmitters) that have been authorized by the Federal Communications Commission (FCC) and the power of each transmitter. Although the FCC permits an effective radiated power (ERP) of up to 500 watts per channel (depending on the tower height), the majority of cellular or PCS cell sites in urban and suburban areas operate at an ERP of 100 watts per channel or less.

An ERP of 100 watts corresponds to an actual radiated power of 5-10 watts, depending on the type of antenna used. In urban areas, cell sites commonly emit an ERP of 10 watts per channel or less. For PCS cell sites, even lower ERPs are typical. As with all forms of electromagnetic energy, the power density from a cellular or PCS transmitter rapidly decreases as distance from the antenna increases.

Consequently, normal ground-level exposure is much less than the exposure that might be encountered if one were very close to the antenna and in its main transmitted beam. Measurements made near typical cellular and PCS cell sites have shown that ground-level power densities are well below the exposure limits recommended by RF/microwave safety standards used by the FCC.

Guidelines

In 1996, the FCC adopted updated guidelines for evaluating human exposure to RF fields from fixed transmitting antennas such as those used for cellular and PCS cell sites. The FCC's guidelines are identical to those recommended by the National Council on Radiation Protection and Measurements (NCRP), a non-profit corporation chartered by Congress to develop information and recommendations concerning radiation protection. The FCC's guidelines also resemble the 1992 guidelines recommended by the Institute of Electrical and Electronics Engineers (IEEE), a non-profit technical and professional engineering society, and endorsed by the American National Standards Institute (ANSI), a nonprofit, privately-funded membership organization that coordinates development of voluntary national standards in the United States.

In the case of cellular and PCS cell site transmitters, the FCC's RF exposure guidelines recommend a maximum permissible exposure level to the general public of approximately 580 microwatts per square centimeter. This limit is many times greater than RF levels typically found near the base of cellular or PCS cell site towers or in the vicinity of other, lower-powered cell site transmitters. Calculations corresponding to a "worst-case" situation (all transmitters operating simultaneously and continuously at

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Attachment 2

the maximum licensed power) show that, in order to be exposed to RF levels near the FCC's guidelines, an individual would essentially have to remain in the main transmitting beam and within a few feet of the antenna for several minutes or longer. Thus, the possibility that a member of the general public could be exposed to RF levels in excess of the FCC guidelines is extremely remote.

When cellular and PCS antennas are mounted on rooftops, RF emissions could exceed higher than desirable guideline levels on the rooftop itself, even though rooftop antennas usually operate at lower power levels than free-standing power antennas. Such levels might become an issue for maintenance or other personnel working on the rooftop. Exposures exceeding the guidelines levels, however, are only likely to be encountered very close to, and directly in front of, the antennas. In such cases, precautions such as time limits can avoid exposure in excess of the guidelines. Individuals living or working within the building are not at risk.

Consumer Help Center

For more information on consumer issues, visit the FCC's Consumer Help Center at https://consumercomplaints.fcc.gov.

Accessible formats

To request this article in an accessible format - braille, large print, Word or text document or audio - write or call us at the address or phone number at the bottom of the page, or send an email to fcc504@fcc.gov.

Last Reviewed 11/04/15

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Maintaining Oak Tree Health

Is your tree healthy?

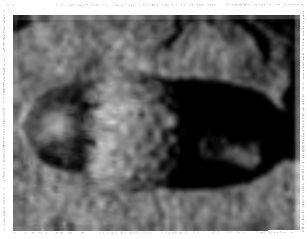
Twig growth for the season should be from 3 to 24 or more inches in length. Bark growth cracks usually indicate that the tree is healthy. Tissue in the cracks should be bright green or pink when scratched. However, loose and discolored bark or unusually flattened areas on the trunk is indicative of a diseased condition.

Root zone Magagement

Maintain an undisturbed soil area above the root zone if possible. (For management purposes the root zone extends out 1/3 the distance beyond the drip line of the tree. The drip line is the outermost edge of a tree's foliage). Minimize grading, digging, trenching, covering the ground with asphalt or concrete or landscape plants, excessive foot traffic, or vehicle parking. Proper management maintains free passage of water and air within the root zone. The area extending 6 feet from the trunk is the most vulnerable and should always be left undisturbed and uncovered.

Pruning

Mature oaks do not require pruning except to remove dead, weakened, diseased, or dangerous branches. If pruning is necessary, trees should be pruned in the dry season. June and July is best.



Irrigation

Native California oaks have evolved in a Mediterranean-type climate where there is little rainfall between late spring and early autumn. As such, they generally do not require irrigation during this dry period and, in fact, trees may be adversely effected by supplemental watering during this period since warm-moist conditions can favor harmful diseases. It is particularly critical that the trunks of oak trees remain dry. However, if the winter season is unusually dry, then a supplemental irrigation in the early spring can complement natural rainfall. Water deeply, to one to two feet, in the outer two-thirds of the root zone. Alternatively, placing organic mulch under the tree can conserve moisture in the root zone by reducing surface evaporation. Mulch also inhibits the growth of weeds, which can compete with oak roots for moisture and nutrients. As mulch breaks down, it also increases organic material in the soil which improves water percolation, aeration in the root zone, and long-term nutrient availability.

Newly planted trees may require supplemental watering while they are establishing in the landscape. These plants may require irrigation up to one every month in the dry period.

Fertilization

A healthy, mature oak under natural conditions does not require supplemental feeding. The leaf litter and other organic debris on the soil supply nutrients as they decompose and release nutrients to the soil and roots. Supplemental fertilization may be needed when the organic debris is removed or when the oak exhibits disease or when growth is poor. Generally, young trees can be fertilized to establish them quickly.

Nitrogen is the primary nutrient of value to oaks. Prior to rain or irrigation, fertilizer can be spread on the ground to cover the outer two-thirds of the root zone. An alternate application method is sometimes useful. Fertilizer can be injected with water or placed in holes dug into the ground, 18 inches apart, along the tree's drip line. Fertilizers should be applied at a rate of two to four pounds of actual nitrogen per thousand square feet of area. (For example, if a nitrogen fertilizer contains 20% elemental nitrogen, then 10 to 20 pounds of fertilizer would be applied per thousand square feet of area). Organic nitrogen or slow release nitrogen sources are preferable. Organic sources should be applied in late winter to allow the nitrogen to move into the root zone. Inorganic sources should be applied in late spring after the first flush of growth.

Compatible Gardens

Drought tolerant plantings can be incorporated into the landscape around oaks. Many California native plants, once established, may require little or no watering. Again, plantings within the root zone area are not recommended.

NOTE: The information on this page was excerpted from from Living among the Oaks, a publication of the Integrated Hardwood Range Management Program, University of California Cooperative Extension. For more information see the IHRMP website. Living Among the Oaks is available at Natural Resources Program, University of California Cooperative Extension, 163 Mulford hall, Berkeley, CA. 94720. (510) 643-5428.

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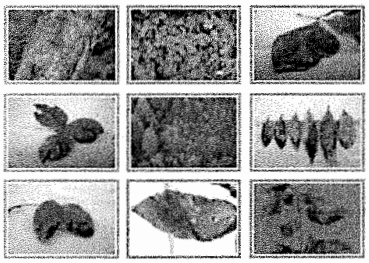

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