

Antennas In or Near Del Norte County

Note: Please see discussion on Antenna regulations starting on page 10.

Latitude='42-03-2 N', Longitude='124-31-3 W', Radius=56.3 Kilometers

	Registration	Owner and Contact	Structure Description
1	Registration: 1007374 File Number: A0253992 Status: Constructed FAA Study: 95-AWP-0989-OE	Owner: UNITED STATES CELLULAR CORPORATION (773)399-8900 Contact: CONNOLLY, PETER M (202)862-5989	Structure Type: TOWER Elevation of Site (meters): 12.5 Overall Height Above Ground (AGL) (meters): 38.1 Overall Height Above Sea Level (meters): 50.6 Located in: CRESCENT CITY, CA Lat/Long: 41-46-20.0N 124-14-06.0W Painting and Lighting Specifications: None
2	Registration: 1007375 File Number: A0279905 Status: Constructed FAA Study: 96-AWP-1822-OE	Owner: UNITED STATES CELLULAR CORPORATION (773)399-8900 Contact: CONNOLLY, PETER M (202)862-5989	Structure Type: TOWER Elevation of Site (meters): 236.2 Overall Height Above Ground (AGL) (meters): 33.5 Overall Height Above Sea Level (meters): 269.7 Located in: REQUA, CA Lat/Long: 41-33-18.0N 124-04-56.0W Painting and Lighting Specifications: None
3	Registration: 1007376 File Number: A0363780 Status: Constructed FAA Study: 96-AWP-1784-OE	Owner: UNITED STATES CELLULAR CORPORATION (773)399-8900 Contact: CONNOLLY, PETER M (202)862-5989	Structure Type: TOWER Elevation of Site (meters): 289.3 Overall Height Above Ground (AGL) (meters): 48.8 Overall Height Above Sea Level (meters): 338.1 Located in: CRESCENT CITY, CA Lat/Long: 41-58-10.0N 124-11-17.0W Painting and Lighting Specifications: None
4	Registration: 1012417 File Number: A0494971 Status: Terminated FAA Study:	Owner: CAL-ONE CELLULAR L. P. (678)339-4277 Contact: Hoof, Pamela Y (678)339-4277	Structure Type: TOWER Elevation of Site (meters): 224.3 Overall Height Above Ground (AGL) (meters): 44.2 Overall Height Above Sea Level (meters): 268.5 Located in: CRESCENT CITY, CA Lat/Long: 41-50-35.0N 124-07-59.0W Painting and Lighting Specifications: None
5	Registration: 1013617 File Number: A0501501	Owner: KPOD, LLC (415)789-5035 Contact: Mostyn, Kevin P	Structure Type: TOWER Elevation of Site (meters): 2.7 Overall Height Above Ground (AGL) (meters): 96.3 Overall Height Above Sea Level (meters): 99.0 Located in: CRESCENT CITY, CA Lat/Long: 41-45-34.0N 124-11-32.0W

	Registration	Owner and Contact	Structure Description
	Status: Constructed FAA Study: 02-AWP-0137-OE	(415)789-5035	FAA Chapters 3, 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
6	Registration: 1014085 File Number: A0216524 Status: Constructed FAA Study: 97-AWP-0278-OE	Owner: CALIFORNIA, STATE OF (916)657-9454 Contact:	Structure Type: TOWER Elevation of Site (meters): 12.2 Overall Height Above Ground (AGL) (meters): 6.7 Overall Height Above Sea Level (meters): 18.9 Located in: CRESCENT CITY, CA Lat/Long: 41-46-19.4N 124-14-16.3W Painting and Lighting Specifications: None
7	Registration: 1018202 File Number: A0216065 Status: Constructed FAA Study: 97-ANM-0336-OE	Owner: United States Cellular Corporation (773)399-8900 Contact: Connolly, Peter M (202)862-5989	Structure Type: POLE Elevation of Site (meters): 218.8 Overall Height Above Ground (AGL) (meters): 21.3 Overall Height Above Sea Level (meters): 240.1 Located in: PISTOL RIVER, OR Lat/Long: 42-18-00.0N 124-23-54.0W Painting and Lighting Specifications: None
8	Registration: 1034379 File Number: A0548804 Status: Granted FAA Study: 2007-ANM-1188- OE	Owner: United States Cellular Corporation (773)399-8900 Contact: CONNOLLY, PETER M (202)955-3000	Structure Type: TOWER Elevation of Site (meters): 212.4 Overall Height Above Ground (AGL) (meters): 41.5 Overall Height Above Sea Level (meters): 253.9 Located in: WEDDERBURN, OR Lat/Long: 42-26-24.7N 124-25-00.7W FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
9	Registration: 1055653 File Number: A0065439 Status: Constructed FAA Study: 98-ANM-0695-OE	Owner: SMULLIN, PATRICIA C DBA = CALIFORNIA OREGON BROADCASTING INC (541)779-5555 Contact:	Structure Type: TOWER Elevation of Site (meters): 207.3 Overall Height Above Ground (AGL) (meters): 27.4 Overall Height Above Sea Level (meters): 234.7 Located in: GOLD BEACH, OR Lat/Long: 42-26-24.0N 124-25-02.0W FAA Chapters 4, 5, 13 Paint and Light in Accordance with FAA Circular Number 70/7460-1J
10	Registration: 1064431	Owner: UNITED STATES CELLULAR CORPORATION	Structure Type: TOWER Elevation of Site (meters): 4.3 Overall Height Above Ground (AGL) (meters): 50.3 Overall Height Above Sea Level (meters): 54.6

	Registration	Owner and Contact	Structure Description
	File Number: A0363782	(773)399-8900	Located in: CRESCENT CITY, CA Lat/Long: 41-45-19.7N 124-11-30.5W
	Status: Constructed	Contact: CONNOLLY, PETER M (202)862-5989	Painting and Lighting Specifications: None
	FAA Study: 99-AWP-0528-OE		

	Registration	Owner and Contact	Structure Description
21	Registration: 1227680	Owner: CURRY COUNTY OF (541)247-7011	Structure Type: BMAST
	File Number: A0281335	Contact: MURPHY, MICHAEL D (541)247-7011	Elevation of Site (meters): 18.3 Overall Height Above Ground (AGL) (meters): 20.1 Overall Height Above Sea Level (meters): 38.4
	Status: Constructed		Located in: GOLD BEACH, OR Lat/Long: 42-24-59.4N 124-25-08.4W
	FAA Study: 01-ANM-2049-OE		Painting and Lighting Specifications: None
22	Registration: 1237141	Owner: Edge Wireless, LLC (541)330-9698	Structure Type: TOWER
	File Number: A0355321	Contact: Gutierrez, Thomas (202)857-3500	Elevation of Site (meters): 99.4 Overall Height Above Ground (AGL) (meters): 27.4 Overall Height Above Sea Level (meters): 126.8
	Status: Cancelled		Located in: Gold Beach, OR Lat/Long: 42-23-04.1N 124-25-12.2W
	FAA Study: 2002-ANM-2048-OE		FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
23	Registration: 1237297	Owner: PacifiCorp (503)813-6915	Structure Type: TOWER
	File Number: A0390781	Contact: Stahl, James O (503)813-6915	Elevation of Site (meters): 17.3 Overall Height Above Ground (AGL) (meters): 22.8 Overall Height Above Sea Level (meters): 40.1
	Status: Constructed		Located in: Crescent City, CA Lat/Long: 41-45-47.4N 124-12-12.2W
	FAA Study: 02-AWP-1201-OE		Painting and Lighting Specifications: None
24	Registration: 1239151	Owner: Edge Wireless, LLC (540)330-9698	Structure Type: TOWER
	File Number: A0368877	Contact: Gutierrez, Thomas	Elevation of Site (meters): 213.4 Overall Height Above Ground (AGL) (meters): 29.9 Overall Height Above Sea Level (meters): 243.3
			Located in: Gold Beach, OR Lat/Long: 42-23-48.0N 124-24-47.7W

	Status: Constructed	(202)857-3500	FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
	FAA Study: 2003-ANM-525- OE		
25	Registration: 1239750	Owner: UNITED STATES CELLULAR CORPORATION (773)399-8900	Structure Type: TOWER
	File Number: A0338090	Contact: CONNOLLY, PETER M (202)862-5989	Elevation of Site (meters): 97.2 Overall Height Above Ground (AGL) (meters): 59.4 Overall Height Above Sea Level (meters): 156.6 Located in: Crescent City, CA Lat/Long: 41-50-55.6N 124-08-02.2W Painting and Lighting Specifications: None
	Status: Constructed		
	FAA Study: 2003-AWP-659- OE		
26	Registration: 1239922	Owner: Edge Wireless, LLC (541)330-9698	Structure Type: TOWER
	File Number: A0355316	Contact: Gutierrez, Thomas (202)857-3500	Elevation of Site (meters): 17.1 Overall Height Above Ground (AGL) (meters): 39.0 Overall Height Above Sea Level (meters): 56.1 Located in: Crescent City, CA Lat/Long: 41-46-19.9N 124-12-18.3W Painting and Lighting Specifications: None
	Status: Constructed		
	FAA Study: 2003-AWP-1356- OE		
27	Registration: 1240520	Owner: Falcon Telecable, A California Limited Partnership (303)323-1423	Structure Type: TOWER
	File Number: A0498792	Contact: Anderten, Alexis C (303)323-1423	Elevation of Site (meters): 12.2 Overall Height Above Ground (AGL) (meters): 24.3 Overall Height Above Sea Level (meters): 36.5 Located in: Crescent City, CA Lat/Long: 41-46-20.4N 124-13-52.2W Painting and Lighting Specifications: None
	Status: Constructed		
	FAA Study: 2003-AWP-3093- OE		
28	Registration: 1242482	Owner: TOTALLY JESUS NETWORK, INC (541)902-2424	Structure Type: TOWER
	File Number: A0367495	Contact: Bloomfield, Larry (541)902-2424	Elevation of Site (meters): 18.3 Overall Height Above Ground (AGL) (meters): 18.3 Overall Height Above Sea Level (meters): 36.6 Located in: Gold Beach, OR Lat/Long: 42-24-45.4N 124-25-10.4W Painting and Lighting Specifications: None
	Status: Granted		
	FAA Study: 2003-ANM-2368- OE		
29	Registration:	Owner:	Structure Type: TOWER

	1245262 File Number: A0515871 Status: Cancelled FAA Study: 2004-AWP-2856- OE	Edge Wireless, LLC (541)330-9698 Contact: Gutierrez, Thomas (704)584-8678	Elevation of Site (meters): 164.5 Overall Height Above Ground (AGL) (meters): 51.2 Overall Height Above Sea Level (meters): 215.7 Located in: Crescent City, CA Lat/Long: 41-33-05.8N 124-03-57.2W Painting and Lighting Specifications: None
30	Registration: 1245696 File Number: A0431309 Status: Constructed FAA Study: 2004-AWP-4615- OE	Owner: Edge Wireless, LLC (541)330-9698 Contact: Gutierrez, Thomas (703)584-8678	Structure Type: TOWER Elevation of Site (meters): 284.1 Overall Height Above Ground (AGL) (meters): 45.1 Overall Height Above Sea Level (meters): 329.2 Located in: Crescent City, CA Lat/Long: 41-48-10.9N 124-04-13.2W Painting and Lighting Specifications: None

	Registration	Owner and Contact	Structure Description
31	Registration: 1246882 File Number: A0475676 Status: Constructed FAA Study: 2005-ANM-2316- OE	Owner: Edge Wireless, LLC (541)330-9698 Contact: Gutierrez, Thomas (703)584-8678	Structure Type: TOWER Elevation of Site (meters): 136.8 Overall Height Above Ground (AGL) (meters): 30.5 Overall Height Above Sea Level (meters): 167.3 Located in: Gold Beach, OR Lat/Long: 42-30-14.5N 124-24-13.0W Painting and Lighting Specifications: None
32	Registration: 1246991 File Number: A0427821 Status: Granted FAA Study: 2004-ANM-1354- OE	Owner: Curry County Emergency Services (541)247-3208 Contact: Barnes, Randy L (503)273-0089	Structure Type: TOWER Elevation of Site (meters): 1040.6 Overall Height Above Ground (AGL) (meters): 36.6 Overall Height Above Sea Level (meters): 1077.2 Located in: Brookings, OR Lat/Long: 42-12-31.2N 124-13-32.0W FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
33	Registration: 1246992 File Number: A0427842	Owner: Curry County Emergency Services (541)247-3208 Contact:	Structure Type: TOWER Elevation of Site (meters): 471.3 Overall Height Above Ground (AGL) (meters): 36.6 Overall Height Above Sea Level (meters): 507.9 Located in: Brookings, OR Lat/Long: 42-05-52.2N 124-16-52.8W

	Status: Granted FAA Study: 2004-ANM-1355- OE	Barnes, Randy L (503)273-0089	FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
34	Registration: 1248419 File Number: A0477939 Status: Cancelled FAA Study: 2005-AWP-2321- OE	Owner: Edge Wireless, LLC (541)330-9698 Contact: Gutierrez, Thomas (703)584-8678	Structure Type: TOWER Elevation of Site (meters): 16.8 Overall Height Above Ground (AGL) (meters): 45.1 Overall Height Above Sea Level (meters): 61.9 Located in: Crescent City, CA Lat/Long: 41-45-34.3N 124-09-25.1W Painting and Lighting Specifications: None
35	Registration: 1248647 File Number: A0478148 Status: Constructed FAA Study: 2005-ANM-1144- OE	Owner: United States Cellular Corporation (773)399-8900 Contact:	Structure Type: TOWER Elevation of Site (meters): 57.9 Overall Height Above Ground (AGL) (meters): 38.1 Overall Height Above Sea Level (meters): 96.0 Located in: Brookings, OR Lat/Long: 42-04-40.8N 124-18-48.5W Painting and Lighting Specifications: None
36	Registration: 1249323 File Number: A0505161 Status: Constructed FAA Study: 2005-ANM-1371- OE	Owner: Edge Wireless, LLC (541)330-9698 Contact: Gutierrez, Thomas (703)584-8678	Structure Type: TOWER Elevation of Site (meters): 99.1 Overall Height Above Ground (AGL) (meters): 39.0 Overall Height Above Sea Level (meters): 138.1 Located in: Pistol River, OR Lat/Long: 42-16-12.8N 124-23-14.0W Painting and Lighting Specifications: None
37	Registration: 1251029 File Number: A0496760 Status: Constructed FAA Study: 2005-AWP-6035- OE	Owner: Edge Wireless, LLC (541)330-9698 Contact: Gutierrez, Thomas (703)584-8678	Structure Type: TOWER Elevation of Site (meters): 18.9 Overall Height Above Ground (AGL) (meters): 39.0 Overall Height Above Sea Level (meters): 57.9 Located in: Crescent City, CA Lat/Long: 41-45-43.9N 124-09-38.6W Painting and Lighting Specifications: None
38	Registration:	Owner:	Structure Type: TOWER

	1252599 File Number: A0530550 Status: Granted FAA Study: 2005-ANM-2602- OE	Verizon Wireless (VAW) LLC (770)797-1070 Contact: Janjua, Jerri L (770)797-1070	Elevation of Site (meters): 214.0 Overall Height Above Ground (AGL) (meters): 45.7 Overall Height Above Sea Level (meters): 259.7 Located in: Wedderburn, OR Lat/Long: 42-26-24.4N 124-25-02.1W FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
39	1254169 File Number: A0510011 Status: Granted FAA Study: 2006-AWP-3566- OE	Owner: MEREDITH,AMY (915)695-9898 Contact: PELTZMAN, LEE J (202)293-0011	Structure Type: 3TA1 Elevation of Site (meters): 15.2 Overall Height Above Ground (AGL) (meters): 81.0 Overall Height Above Sea Level (meters): 96.2 Located in: CRESCENT CITY, CA Lat/Long: 41-47-33.4N 124-09-10.3W FAA Chapters 3, 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
40	1254170 File Number: A0510013 Status: Granted FAA Study: 2006-AWP-3567- OE	Owner: MEREDITH,AMY (915)695-9898 Contact: PELTZMAN, LEE J (202)293-0011	Structure Type: 3TA2 Elevation of Site (meters): 15.2 Overall Height Above Ground (AGL) (meters): 81.0 Overall Height Above Sea Level (meters): 96.2 Located in: CRESCENT CITY, CA Lat/Long: 41-47-32.4N 124-09-14.4W FAA Chapters 3, 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K

	Registration	Owner and Contact	Structure Description
41	1254171 File Number: A0510015 Status: Granted FAA Study: 2006-AWP-3568- OE	Owner: MEREDITH,AMY (915)695-9898 Contact: PELTZMAN, LEE J (202)293-0011	Structure Type: 3TA3 Elevation of Site (meters): 15.2 Overall Height Above Ground (AGL) (meters): 81.0 Overall Height Above Sea Level (meters): 96.2 Located in: CRESCENT CITY, CA Lat/Long: 41-47-34.4N 124-09-06.1W FAA Chapters 3, 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
42	1254764 File Number: A0530569	Owner: Verizon Wireless (VAW) LLC (770)797-1070 Contact:	Structure Type: POLE Elevation of Site (meters): 214.0 Overall Height Above Ground (AGL) (meters): 39.6 Overall Height Above Sea Level (meters): 253.6 Located in: Gold Beach, OR Lat/Long: 42-23-47.9N 124-24-46.1W

	Status: Granted	Janjua, Jerri L (770)797-1070	FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K
	FAA Study: 2006-ANM-1155- OE		
43	Registration: 1256856	Owner: UNITED STATES CELLULAR CORPORATION (773)399-8900	Structure Type: TOWER
	File Number: A0535722	Contact: CONNOLLY, PETER (202)862-5989	Elevation of Site (meters): 15.8 Overall Height Above Ground (AGL) (meters): 21.3 Overall Height Above Sea Level (meters): 37.1
	Status: Granted		Located in: CRESCENT CITY, CA Lat/Long: 41-45-32.8N 124-12-15.7W
	FAA Study: 2007-AWP-48-OE		Painting and Lighting Specifications: None
44	Registration: 1257605	Owner: Port of Gold Beach (541)247-6269	Structure Type: BANT
	File Number: A0544208	Contact: Rush, Colin M (503)794-3761	Elevation of Site (meters): 2.1 Overall Height Above Ground (AGL) (meters): 15.2 Overall Height Above Sea Level (meters): 17.3
	Status: Granted		Located in: Gold Beach, OR Lat/Long: 42-25-07.1N 124-25-19.4W
	FAA Study: 2007-ANM-658- OE		Painting and Lighting Specifications: None
45	Registration: 1257752	Owner: Edge Wireless, LLC (541)312-5400	Structure Type: TOWER
	File Number: A0545064	Contact:	Elevation of Site (meters): 196.9 Overall Height Above Ground (AGL) (meters): 45.1 Overall Height Above Sea Level (meters): 242.0
	Status: Granted		Located in: Brookings, OR Lat/Long: 42-04-00.6N 124-11-55.8W
	FAA Study: 2007-ANM-695- OE		Painting and Lighting Specifications: None
46	Registration: 1258321	Owner: UNITED STATES CELLULAR CORPORATION (773)399-8900	Structure Type: TOWER
	File Number: A0548805	Contact: CONNOLLY, PETER (202)862-5989	Elevation of Site (meters): 212.0 Overall Height Above Ground (AGL) (meters): 41.4 Overall Height Above Sea Level (meters): 253.4
	Status: Cancelled		Located in: Wedderburn, OR Lat/Long: 42-26-24.7N 124-25-00.6W
	FAA Study: 2007-ANM-1188- OE		FAA Chapters 4, 5, 12 Paint and Light in Accordance with FAA Circular Number 70/7460-1K

http://wireless2.fcc.gov/UlsApp/AsrSearch/asrResults.jsp;JSESSIONID_ARSEARCH=GGN861G6QdIHql6cNj3hepsj6hHz0H4qvFPoBVuxR2Y1gvaJM7HI!122632051!973991607?searchType=TRL&fiViewType=EV&curPage=5&reqPage=1, retrieved May 12, 2007

Regulations Pertaining to Antenna Structures

The federal government governs placement of antenna structures. Section 332(c)(7)(A) of the Telecom Act provides that “[e]xcept as provided in this paragraph, nothing in this Chapter shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities.” 47 U.S.C. § 332(c)(7)(A). This portion of the U.S.C has its origin in the Telecommunications Act of 1995, specifically:

SEC. 704. FACILITIES SITING; RADIO FREQUENCY EMISSION STANDARDS.

(a) NATIONAL WIRELESS TELECOMMUNICATIONS SITING POLICY- Section 332(c) (47 U.S.C. 332(c)) is amended by adding at the end the following new paragraph:

(7) PRESERVATION OF LOCAL ZONING AUTHORITY-

(A) GENERAL AUTHORITY- Except as provided in this paragraph, nothing in this Act shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities.

(B) LIMITATIONS-

(i) The regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof--

(I) shall not unreasonably discriminate among providers of functionally equivalent services; and
(II) shall not prohibit or have the effect of prohibiting the provision of personal wireless services.

(ii) A State or local government or instrumentality thereof shall act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time after the request is duly filed with such government or instrumentality, taking into account the nature and scope of such request.

(iii) Any decision by a State or local government or instrumentality thereof to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record.

(iv) 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.

(v) Any person adversely affected by any final action or failure to act by a State or local government or any instrumentality thereof that is inconsistent with this subparagraph may, within 30 days after such action or failure to act, commence an action in any court of competent jurisdiction.¹

The Telecom Act requires that permit denials be supported by substantial evidence. Specifically, 47 U.S.C. § 332(c)(7)(B)(iii) states that “[a]ny decision by a State or local government or instrumentality thereof to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record.”

The interpretation of “substantial evidence” in the context of the Telecom Act was the focus of extended analysis in *MetroPCS*, which held that “the substantial evidence inquiry does not require incorporation of the substantive federal standards imposed by the [Telecom Act].” 400 F.3d at 723. Rather, courts should consider whether the denial is based on “substantial evidence in the context of applicable *state and local law*.” *Id.* at 724. Consequently, the Telecom Act “ ‘does not affect or encroach upon the *substantive* standards to be applied under established principles of state and local law.’ ” *Id.* (quoting *Cellular Tel. Co. v. Town of Oyster Bay*, 166 F.3d 490, 494 (2d Cir. 1999); *see also id.* (concluding that the substantial evidence standard “does not create a substantive federal limitation upon local land use regulatory power”))

(internal quotation omitted). *MetroPCS* accords with the decisions of other circuits in this respect. *See id.* at 723 (noting that “there appears to be universal agreement among the circuits as to the substantive content of [the substantial evidence] requirement”); *see, e.g., Preferred Sites, LLC v. Troup County*, 296 F.3d 1210, 1219 (11th Cir. 2002); *Oyster Bay*, 166 F.3d at 494.

The substantial evidence standard is “essentially ‘deferential,’ ” and courts may not “ ‘engage in [their] own factfinding nor supplant [a city’s] reasonable determinations.’ ” *MetroPCS*, 400 F.3d at 725 (quoting *Oyster Bay*, 166 F.3d at 494) (first alteration in original). Substantial evidence implies “less than a preponderance, but more than a scintilla of evidence.” *MetroPCS*, 400 F.3d at 725 (internal quotation omitted).²

The FCC addresses those structures that must be registered as antennas and is tied to Federal Aviation Administration (FAA) reporting requirements.

The FCC Rules specifically define the term "antenna structures" as "[T]he radiating and/or receive system, its supporting structures and any appurtenances mounted thereon." In practical terms, an antenna structure could be a free standing structure, built specifically to support or act as an antenna, or it could be a structure mounted on some other man-made object (such as a building or bridge). In the latter case, note that the structure must be registered with the FCC, not the building or bridge. Objects such as buildings, observation towers, bridges, windmills, and water towers that DO NOT have an antenna mounted on them ARE NOT antenna structures and should not be registered. Keep in mind that the FCC only has jurisdiction over antenna structures, and thus, other objects that do not house antennas are not required to be registered with the FCC -- regardless of their location or height.

The Antenna Structure Registration Program is the process under which each antenna structure that requires FAA notification -- including new and existing structures -- must be registered with the FCC by its owner. The owner is the single point of contact for resolving antenna-related problems and is responsible for the maintenance of those structures requiring painting and/or lighting. Note that because the Antenna Structure Registration requirements only apply to those antenna structures that may create a hazard to air navigation (either by their height or proximity to an airport), the registration files do not contain a comprehensive record of all antenna structures.

Antenna Structure Registration does not replace the FAA notification requirement. Registration must be undertaken *after* an owner has requested a study of the site by the Federal Aviation Administration and received a "final determination of no hazard," but before any licensing applications are filed with the FCC for the site.³

Primary antennas for cellular and PCS transmissions are usually located outside 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." Typical heights for cell site towers are 50-200 feet. 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.⁴

Radio Frequency Safety – Cellular and PCS Base stations⁵

Radiofrequencies constitute part of the overall electromagnetic spectrum. Cellular communications systems use frequencies in the 800-900 megahertz (MHz) portion of the radiofrequency (RF) spectrum (frequencies formerly used for UHF-TV broadcasting), and transmitters in the Personal Communications Service (PCS) use frequencies in the range of 1850-1990 MHz. Primary antennas for cellular and PCS transmissions are usually located on towers, water tanks and other elevated structures including rooftops and the sides of buildings.

The combination of antennas and associated electronic equipment is referred to as a cellular or PCS base station" or "cell site." Typical heights for base station towers or structures are 50-200 feet. A typical cellular base station may utilize several "omni-directional" antennas that look like poles or whips, 10 to 15 feet in length. PCS (and also many cellular) base stations use a number of "sector" antennas that look like rectangular panels. The dimensions of a sector antenna are typically 1 foot by 4 feet. Antennas are usually arranged in three groups of three with one antenna in each group used to transmit signals to mobile units (car phones or hand-held phones). The other two antennas in each group are used to receive signals from mobile units.

The Federal Communications Commission (FCC) authorizes cellular and PCS carriers in various service areas around the country. At a cell site, the total RF power that could be transmitted from each transmitting antenna at a cell site depends on the number of radio channels (transmitters) that have been authorized and the power of each transmitter. Typically, for a cellular base station, a maximum of 21 channels per sector (depending on the system) could be used. Thus, for a typical cell site utilizing sector antennas, each of the three transmitting antennas could be connected to up to 21 transmitters for a total of 63 transmitters per site. When omni-directional antennas are used, up to 96 transmitters could be implemented at a cell site, but this would be very unusual. While a typical base station could have as many as 63 transmitters, not all of the transmitters would be expected to operate simultaneously thus reducing overall emission levels. For the case of PCS base stations, fewer transmitters are normally required due to the relatively greater number of base stations.

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 base stations 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 (ERP is not equivalent to the power that is radiated but is a measure of the directional characteristics of the antenna). As the capacity of a system is expanded by dividing cells, i.e., adding additional base stations, lower ERPs are normally used. In urban areas, an ERP of 10 watts per channel (corresponding to a radiated power of 0.5 - 1 watt) or less is commonly used. For PCS base stations, even lower radiated power levels are normally used.

The signal from a cellular or PCS base station antenna is essentially directed toward the horizon in a relatively narrow beam in the vertical plane. For example, the radiation pattern for an omni-directional antenna might be compared to a thin doughnut or pancake centered around the antenna while the pattern for a sector antenna is fan-shaped, like a wedge cut from a pie. As with all forms of electromagnetic energy, the power density from a cellular or PCS transmitter decreases rapidly (according to an inverse square law) as one moves away from the antenna. Consequently, normal ground-level exposure is much less than exposures 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 installations have shown that ground-level power densities are well below limits recommended by RF/microwave safety standards.

In 1996, the FCC adopted updated guidelines for evaluating human exposure to radiofrequency (RF) fields from fixed transmitting antennas such as those used for cellular radio and PCS base stations¹. The new guidelines for cellular and PCS base stations are identical to those recommended by the National Council on Radiation Protection and Measurements (NCRP)². These guidelines are also similar to the 1992 guidelines recommended by the American National Standards Institute and the Institute of Electrical and Electronics Engineers (ANSI/IEEE C95.1-1992)³. The FCC adopted guidelines for hand-held RF devices, such as cellular and PCS phones,

that are the same as those recommended by the ANSI/IEEE and NCRP guidelines (see later discussion).

In the case of cellular base station transmitters, at a frequency of 869 MHz (the lowest frequency used), the FCC's RF exposure guidelines recommend a maximum permissible exposure level of the general public (or exposure in "uncontrolled" environments) of about 580 microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$), as averaged over any thirty-minute period. This limit is many times greater than RF levels typical found near the base of typical cellular towers or in the vicinity of other, lower-powered cellular base station transmitters. For example, measurement data obtained from various sources have consistently indicated that "worst-case" ground-level power densities near typical cellular towers are on the order of 1 $\mu\text{W}/\text{cm}^2$ or less (usually significantly less). Calculations corresponding to a "worst-case" situation (all transmitters operating simultaneously and continuously at the maximum licensed power) show that in order to be exposed to levels near the FCC's limits for cellular frequencies, an individual would essentially have to remain in the main transmitting beam (at the height of the antenna) and within a few feet from the antenna. This makes it extremely unlikely that a member of the general public could be exposed to RF levels in excess of these guidelines from cellular base station transmitters.

For PCS base station transmitters, the same type of analysis holds, except that at the PCS transmitting frequencies (1850-1990 MHz) the FCC's exposure limits for the public are 1000 $\mu\text{W}/\text{cm}^2$. Therefore, there would typically be an even greater margin of safety between actual public exposure levels and the recognized safety limit.

When cellular and PCS antennas are mounted at rooftop locations it is possible that RF levels greater than 1 $\mu\text{W}/\text{cm}^2$ could be present on the rooftop itself. This might become an issue if the rooftop were accessible to maintenance personnel or others. However, exposures approaching or exceeding the safety guidelines are only likely to be encountered very close to and directly in front of the antennas. Even if RF levels were to be higher than desirable on a rooftop, appropriate restrictions could be placed on access. Factoring in the time-averaging aspects of safety standards could also be used to reduce potential exposure. The fact that rooftop cellular and PCS antennas usually operate at lower power levels than antennas on free-standing towers makes excessive exposure conditions on rooftops even less likely. This reason and the significant signal attenuation of a building's roof also minimizes any chance for harmful exposure of persons living or working within the building itself.

Radio Frequency Safety – Mobil (vehicle-mounted) antennas⁶

Vehicle-mounted antennas used for cellular communications normally operate at a power level of 3 watts or less. These cellular antennas are typically mounted on the roof, on the trunk, or on the rear window of a car or truck. Studies have shown that in order to be exposed to RF levels that approach the safety guidelines it would be necessary to remain very close to a vehicle-mounted cellular antenna. For example, a study done for AT&T Bell Laboratories by the University of Washington documented typical and "worst-case" exposure levels and specific absorption rates (SAR) for vehicle occupants and persons standing close to vehicle-mounted cellular antennas. Worst-case exposure conditions were considered when an individual was at the closest possible distance from the antenna. Several configurations were tested using adult and child "phantom" models.

The results of this study showed that the highest exposure (1900 $\mu\text{W}/\text{cm}^2$) occurred with a female model at a distance of 9.7 cm (3.8 inches) from one of the antennas operating at a power level of 3 watts. Although this level is nominally in excess of the FCC's exposure limits for

power density at this frequency, analysis of the data indicated that the antenna would have to be driven to 7 W of power before the limit for specific absorption rate (SAR) allowed by the FCC guidelines would be exceeded. The intermittent nature of transmission and the improbability that a person would remain so close to the antenna for any length of time further reduces the potential for excessive exposure.

The University of Washington study also indicated that vehicle occupants are effectively shielded by the metal body. Motorola, Inc., in comments filed with the FCC, has expressed the opinion that proper installation of a vehicle-mounted antenna to maximize the shielding effect is an effective way of limiting exposure. Motorola and other companies have recommended antenna installation either in the center of the roof or the center of the trunk. In response to concerns expressed over the commonly-used rear-window mounted cellular antennas, Motorola has recommended a minimum separation distance of 30-60 cm (1 -2 feet) to minimize exposure to vehicle occupants resulting from antenna mismatch for this type of antenna installation.

In summary, from data gathered to date, it appears that properly installed, vehicle-mounted, personal wireless transceivers using up to 3 watts of power would result in maximum exposure levels in or near the vehicle that are well below the FCC's safety limits. This assumes that the transmitting antenna is at least 15 cm (about 6 inches) or more from vehicle occupants. Time-averaging of exposure (either a 6 or 30 minute period is specified) will usually result in still lower values when compared with safety guidelines.

Radio Frequency Safety – Hand-held cellular telephones and PCS devices⁷

A question that often arises is whether there may be potential health risks due to the RF emissions from hand-held cellular telephones and PCS devices. The FCC's exposure guidelines, and the ANSI/IEEE and NCRP guidelines upon which they are based, specify limits for human exposure to RF emissions from hand-held RF devices in terms of specific absorption rate (SAR). For exposure of the general public, e.g., exposure of the user of a cellular or PCS phone, the SAR limit is an absorption threshold of 1.6 watts/kg (W/kg), as measured over any one gram of tissue.

Measurements and computational analysis of SAR in models of the human head and other studies of SAR distribution using hand-held cellular and PCS phones have shown that, in general, the 1.6 W/kg limit is unlikely to be exceeded under normal conditions of use. Before FCC approval can be granted for marketing of a cellular or PCS phone, compliance with the 1.6 W/kg limit must be demonstrated. Also, testing of hand-held phones is normally done under conditions of maximum power usage. In reality, normal power usage is less and is dependent on distance of the user from the base station transmitter.

In recent years publicity, speculation and concern over claims of possible health effects due to RF fields from hand-held wireless telephones prompted industry-sponsored groups, such as Wireless Technology Research, L.L.C. (WTR) and Motorola, Inc., to initiate research programs aimed at investigating whether there is any risk to users of these devices. Past studies carried out at frequencies both higher and lower than those used for cellular and PCS phones have led expert organizations to conclude that typical RF exposures from these devices are safe. However, the Federal Government is monitoring the results of the ongoing industry-sponsored research through an inter-agency working group led by the EPA and the FDA's Center for Devices and Radiological Health.

In a 1993 "Talk Paper," the FDA stated that it did not have enough information at that time to rule out the possibility of risk, but if such a risk exists "it is probably small." The FDA concluded that there is no proof that cellular telephones can be harmful, but if individuals remain concerned several precautionary actions could be taken. These included limiting conversations on hand-held cellular telephones to those that are essential and making greater use of telephones with vehicle-mounted antennas where there is a greater separation distance between the user and the radiating structure.

¹ Telecommunications Act of 1996, <http://thomas.loc.gov/cgi-bin/query/z?c104:S.652.ENR>:

² SPRINT PCS ASSETS, L.L.C., a Delaware limited liability company, wholly-owned by SPRINT TELEPHONY PCS, L.P., a Delaware limited partnership, *Plaintiff-Appellant*, v. CITY OF LA CAÑADA FLINTRIDGE, a public entity; STEPHEN A. DEL GUERCIO, in his official capacity as Mayor of the City of La Cañada Flintridge, LAURA OLHASSO in her official capacity as Mayor Pro Tem of the City of La Cañada Flintridge, Anthony J. PORTANTINO, in his official capacity as Council Member of the City of La Cañada Flintridge; GREGORY BROWN, in his official capacity as Council Member of the City of La Cañada Flintridge; DAVID A. SPENCE, in his official capacity as Council Member of the City of La Cañada Flintridge, *Defendants-Appellees*, No. 05-55014, D.C. No. CV-03-DOC OPINION, Appeal from the United States District Court for the Central District of California David O. Carter, District Judge, Presiding Argued and Submitted October 19, 2005, Pasadena, California, UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

³ Antenna Structure Registration, Federal Communications Commission, <http://wireless.fcc.gov/antenna/about/index.html>, retrieved July 25, 2005

⁴ Human Exposure To Radiofrequency Fields: Guidelines For Cellular & PCS Sites," Federal Communications Commission, <http://ftp.fcc.gov/cgb/consumerfacts/rfexposure.html>, retrieved January 27, 2006

⁵ Radio Frequency Safety, Office of Engineering and Technology, Federal Communications Commission, Cellular and PCS Base Stations, <http://www.fcc.gov/oet/rfsafety/cellpcs.html>, retrieved January 27, 2006

⁶ *Ibid*, Radio Frequency Safety

⁷ *Ibid*, Radio Frequency Safety