

**BONSALL COMMUNITY SPONSOR GROUP**

*Dedicated to enhancing and preserving a rural lifestyle*



# **WIRELESS FACILITIES MASTER PLAN**



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## 1. Purpose

The Bonsall Community Wireless Master Plan seeks to do the following:

- Preserve and promote Bonsall's rural character
- Protect the safety and general welfare of Bonsall residents
- Accommodate the communication needs of residents, businesses and visitors
- Educate residents about personal wireless service facilities and our community's design expectations in order to improve their involvement and participation in the decision making process.

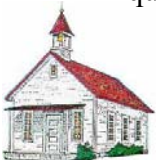
The glossary at the back of the plan is intended to help the layperson understand the jargon that unfortunately must be used. This plan intends to:

- A. Preserve the character and appearance of the Bonsall while allowing adequate wireless telecommunications services to be developed.
- B. Protect the scenic, historic, environmental, and natural resources of the Bonsall.
- C. Provide standards and requirements for the operation, siting, design, appearance, construction, monitoring, modification, and removal of wireless telecommunications facilities.
- D. Minimize the proliferation of antenna structures by requiring the sharing of existing communications facilities and sites where possible and appropriate.
- E. Facilitate the provision of telecommunications services to the residences and businesses of the Bonsall.
- F. Minimize the adverse visual effects of antenna structures and other facilities through careful design and siting standards.
- G. Encourage, through performance standards and incentives, the location of antenna structures in non-residential areas and away from other sensitive areas such as schools and childcare facilities.
- H. Assist the wireless companies and their representatives by providing information that facilitates the deployment process.
- I. Provide guidance to the Bonsall Community Sponsor Group (BCSG) for its decisions about these facilities.

The plan does not:

- A. Prohibit or have the effect of prohibiting the provision of personal wireless services;
- B. Unreasonably discriminate among providers of functionally equivalent services; or \
- C. Regulate personal wireless services on the basis of the environmental effects of radio frequency emissions to the extent that the regulated services and facilities comply with the Federal Communications Commission (FCC) regulations concerning such emissions.

The BCSG Group will make its decision to recommend approval or denial of an installation to the County of San Diego based on the applicant's conformance to this plan and responsiveness to questions at BCSG meetings.



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## 1.1 Description

A Wireless Community Master Plan is a Master Plan of preferred sites and designs for wireless facilities for a defined geographic area (Bonsall) prepared in cooperation with one or more wireless service providers; formally submitted by the BCSG to the Director of Planning and Land Use; reviewed by the Director for such issues as aesthetics and community compatibility; and following public review, approved by the Director. The approved Community Master Plan will be applicable to all providers as defined in the Plan.

## 1.2 Compliance

Following approval of the Bonsall Community Wireless Master Plan by the Director of the Department of Planning and Land providers will be required to bring their facilities into compliance at the earliest of the following:

1. Within 36 months of date of approval;
2. By the second lease renewal of the telecommunications site; or
3. At application for a major or minor use permit.

## 2. Locations and Structures

This section deals with the locations and types of wireless facilities that are most appropriate for the Bonsall community. The expanding use of personal wireless services requires more facilities to be built. This risks the visual qualities of the community - its natural vistas, its rural streets, the well-tended and attractive commercial areas. Our challenge is to protect community aesthetics and promote safety, while facilitating the use of this technology throughout the community.

It is not the purpose of this plan to encourage the location of every local personal wireless service facility within the Bonsall's boundaries. There are numerous nearby locations in other unincorporated areas that border Bonsall that may serve equally well or better as potential locations.

The best location in the community for personal wireless facilities is a function of the land use and the presence or absence of taller structures that can accept antennas that will not be noticed. One of the overall goals is to locate facilities and to site and design them so they are as unobtrusive as possible. In general, non-residential locations are better than residential locations because such facilities are less noticeable and more accepted by the public. Also facilities with antennas mounted on existing structures are generally preferred to facilities with antennas mounted on new structures. Antennas mounted on existing taller structures are usually less noticeable because the structure is already part of the community's visual landscape. And all of these can be camouflaged.



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Bonsall's preference order for locations of personal wireless service facilities is:

## Most Preferred

## Least Preferred

Existing Structures  
in Non-Residential  
Areas

New structures in  
Non-Residential  
Areas

Existing structures  
in Residential Areas

New structures  
in Residential Areas

### **2.1. Existing Structures in Non-Residential Locations.**

The following list describes the structures that have been used or may be potentially used for personal wireless service facilities on non-residential lands. It is meant to be as inclusive as possible, but there may be other opportunities that will be reviewed on a case-by-case basis.

#### **A. Privately-Owned Locations**

There are numerous taller structures on private non-residential property that are candidate locations for personal wireless service facilities. These include:

- Tall Buildings
- Parking Lot Light Standards
- Utility Structures: transmission towers, taller utility poles, private water tanks
- SDG&E Centers and Power Substations
- Pylon Signs (e.g. gas station signs)
- Personal Wireless Service Monopoles
- Religious Institutions

#### **B. Publicly-Owned Locations**

One and two story buildings that have yet to be built:

- Fire Station
- Library

Existing one story buildings:

- Community Center
- Fire Station

Relatively undeveloped and vacant properties:

- Various Locations
- Parks

Lands, such as lots and public rights of way that have other structures:

- Water tanks or towers
- Traffic Signal Poles
- Streetlights



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Other locations owned by other government agencies may be suitable sites for personal wireless service facilities. Each agency would decide whether its properties would be available for lease for personal wireless service facilities. Such facilities need permits from the County since these commercial personal wireless service facilities do not relate directly to the government agency's mission.

- Public School District properties (building mounts, parking lot light standards)
- County Road Station
- Water District Properties

## **2.2. New Structures in Non-Residential Locations.**

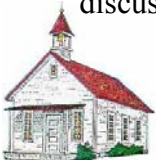
There are many non-residential locations that lack a suitable mounting structure for a personal wireless service facility, especially elevated antennas. Under these circumstances, the personal wireless service facility should be located in an area that has the least visual impact. In considering such a visible facility, all alternative locations should be reviewed and the carrier should apply the best available camouflage techniques to the facility. Sometimes the most appropriate design solution may be "hiding the facility in plain sight." This is accomplished by camouflaging the personal wireless service facility with materials in colors, sizes, textures and proportions that blend into the environment, without creating visual contradictions. This is discussed in more detail in the Siting and Design Section. Possible custom-built structures to house or mount personal wireless service facilities include:

- City gateway or neighborhood entry features
- Church steeples
- Building entry features
- Rooftop Chimneys
- Artificial trees (monotrees)
- Artificial Rocks
- Artificial street lamps
- Artificial Power/Telephone poles

Because Bonsall has so many hills and canyons, there may be hillside locations in Bonsall where a ground-mounted personal wireless facility will be technically feasible and considered unobtrusive.

## **2.3. Existing Structures in Residential Locations.**

The plan assumes that future deployment of personal wireless service facilities in residential areas will occur at low antennas heights. As such, the most unobtrusive mounting structures will likely be existing streetlights, traffic signals, and utility poles. There will be facility opportunities on public structures and churches that are located in residential neighborhoods, but these locations are few in comparison to the number of public utility structures. Techniques to camouflage these facilities are discussed in the Siting and Design section.



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## 2.4. New Structures in Residential Locations.

New structures in the Bonsall Sponsor Area must be camouflaged. Further information on suitable camouflage methods is provided in the Siting and Design section.

## 2.5. Outside Bonsall

Bonsall is bordered by unincorporated areas. Each area has buildings, taller structures and features, and property that could accommodate a personal wireless service facility. In many cases, these locations may be preferable to a Bonsall-based location if they are less obtrusive to the surrounding area.

The BCSG has identified the following locations that will be considered “pre-approved” for the purpose of cell tower installations.

<b>Location</b>	<b>Maximum Height Permitted</b>
1. 123 Main street	25 feet (example)

**(COUNTY TO SUPPLY EXISTING COMPLETE CELL SITE LIST WITH PLOTTED MAP)**



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## 3. Siting and Design

Siting is the relationship of the personal wireless service facility to its site and any structures on that site. Design is the arrangement of parts, details, form, color, etc. to achieve a desired functionality and appearance. Bonsall is concerned with the appearance of the facility and how well it fits into the overall context of the built environment. This plan provides specific siting and design guidance categorized by the type of equipment. In general the equipment should be sited to blend in with their surroundings. The environmental context will help dictate the best site and best camouflage technique(s) to use. Wireless companies are encouraged to provide creative solutions to facility siting and design that meet the plan's goals.

### 3.1. Antenna Structures

Proposed facilities shall not unreasonably interfere with the view from any public park, natural scenic vista, historic building or district, or major view corridor. Height and mass of facilities shall not exceed that which is essential for the intended use and public safety. Height shall be limited to 35 feet unless it is demonstrated that a co-location on a higher structure will eliminate other facilities among carriers.

- A. Towers, antennas and any necessary support structures shall be designed to blend into the surrounding environment through the use of color camouflaging and architectural treatment, except in cases in which the Federal Aviation Authority (FAA), state or federal authorities have dictated color. Use of stealth design, including those that imitate natural features, may be required in visually sensitive locations.
- B. Antennas and any necessary support structures shall be designed to avoid having an undue adverse impact aesthetic impact on prominent ridgelines and hilltops. In determining whether a tower's aesthetic impact would be undue and adverse, the BCSG will consider:
  - the period of time during which the proposed tower would be viewed by the traveling public on a public highway;
  - the frequency of the view experienced by the traveling public;
  - the degree to which the tower would be screened by existing vegetation, the topography of the land, and existing structures;
  - background features in the line of sight to the proposed tower that obscure the facility or make it more conspicuous;
  - the distance of the proposed tower from the view point and the proportion of the facility that is visible above the skyline;
  - the sensitivity or unique value of a particular view effected by the proposed tower;
  - Significant disruption of a viewshed that provides context to a historic or scenic resource.



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Bonsall shall have the authority to impose conditions consistent with the purpose of this section in approving a proposed facility. Furthermore, Bonsall may designate an alternative location for the tower to be evaluated by the applicant if it is determined that the proposed location would result in undue adverse aesthetic impacts. In consideration of this, the applicant may revise its application to include such a site, assuming it is available to the applicant and reasonably technically feasible to meet the applicant's communication objectives.

- C. All buildings and accessory structures shall meet the minimum setback requirements of the underlying county zoning or setback requirements specified in this bylaw. If the minimum setbacks of the zoning are less than the height of the tower, including antennas or other vertical appurtenances, the minimum distance from the tower to any property line shall be no less than the height of the tower, including antennas and other vertical appurtenances.
- D. Ground mounted equipment or antennas as well as buildings and accessory structures shall be screened from view by suitable vegetation, except where a design of non-vegetative screening better complements the architectural character of the surrounding neighborhood. A planted or vegetative screen shall have a minimum of height of six feet and shall have the potential to grow to a height of at least 15 feet and a breadth of 10 feet at maturity. Existing on-site vegetation outside the immediate site for the wireless facility shall be preserved or improved. Disturbance to existing topography shall be minimized unless the disturbance is demonstrated to result in less visual impact on the facility from surrounding properties and other vantage points.

## 3.2 Other Design Requirements for Antenna Structures

- Antennas near the ground in hilly locations should be screened by existing vegetation. If vegetation is sparse, additional landscaping may be planted that is similar to the surrounding vegetation or native to the area.
- Antennas should be painted and textured to match the background view or foreground view whichever will make the antennas less obtrusive. If the background is the sky, the preference is a flat gray color.
- Antennas may be screened with radio wave transparent materials that have been designed and fabricated to match elements normally viewed in the immediate environment.
- Typically the least obtrusive placement on a building is a flush mounting on some roof-top equipment, structure, penthouse or building wall. A secondary location is a central place on the roof where the roofline can cut off angles of view, making the antennas less visible. The least desirable roof mount is a vertical protrusion at or near the parapet where the antennas are likely to be the most visible.
- Select antennas of a shape and size that are in proportion to the mounting surface, and mount them flush against the structure.



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- On a monopole, antennas should be mounted flush to the shaft or in vertical alignment with the shaft. The antennas should be enclosed in a screening cylinder if this reduces the obtrusiveness of the facility.
- A new antenna rack configuration on an existing monopole should only be considered if the monopole can be adapted with adequate camouflage.
- The antenna shape and mounting orientation guideline may be relaxed if the antenna is of such a small size that its presence would not be noticed by the general public.
- Antennas may be mounted on top of a pole-type structure (e.g., light pole, traffic signal pole, power/telephone pole, etc.) if the pole is 30 feet or less in height. The antennas should be vertically aligned with the pole and shall not exceed 20% of the height of the pole or 35 feet whichever is smaller.

### 3.3 Co-Located Antennas

An application for a new wireless telecommunications facility shall not be approved unless the facilities planned for the proposed structure cannot be accommodated on an existing or approved structure due to one of the following reasons:

- A. The proposed antennas and equipment would exceed the structural or spatial capacity of the existing or approved tower or facility, as documented by a qualified engineer licensed to practice in the State of California. Additionally, the existing or approved tower cannot be reinforced, modified or replaced to accommodate planned or equivalent equipment, at a reasonable cost, to provide coverage and capacity comparable to that of the proposed facility.
- B. The proposed antennas and equipment would cause interference materially impacting the usefulness of other existing or permitted equipment at the existing or approved tower or facility as documented by a qualified engineer and such interference cannot be mitigated at a reasonable cost.
- C. The proposed antennas and equipment, either alone or together with existing facilities, equipment or antennas, would create excessive radiofrequency exposure.
- D. Existing or approved towers and structures cannot accommodate the planned equipment at a height necessary to function reasonably or are too far from the area of needed coverage to function reasonably as documented by a qualified engineer.
- E. Aesthetic reasons make it unreasonable to locate the planned telecommunications equipment upon an existing or approved tower or building.
- F. There is no existing or approved tower in the area in which coverage is sought.
- G. Other unforeseen specific reasons make it unreasonable to locate the planned telecommunications equipment upon an existing or approved tower or building

Where applicable, structures must be designed to allow for future placement of antennas upon the tower and to accept antennas mounted at varying heights when overall permitted height allows. Structures shall be designed in all respects to accommodate both the applicant's antennas and additional antennas when overall permitted height allows.



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## 3.4 Other Co-location Requirements

In general co-located antennas mounted on the same monopole or building roof should be less visually obtrusive than separate personal wireless service facilities.

- All of the siting and design guidelines applicable to a single set of antennas apply to co-located antennas as well
- Building rooftops suitable for numerous co-located antennas should be retro-fitted with larger equipment screens or extensions of the roof element that are architecturally compatible with the building.

## 3.5 Cables

- Cable runs along the ground should generally be placed underground unless the health of nearby mature trees would be affected.
- If the cable runs are located above ground, they should be camouflaged from public view. Cables should not be routed along exterior surfaces unless they are camouflaged with materials that integrate with the design of the structure.

## 3.6 Equipment Cabinets and Enclosures

- On developed sites, the best location for equipment cabinets is an interior building space. Secondary locations include the roof and ground level parking areas. Roof-mounted equipment should be adequately screened. Ground level equipment enclosures should not remove County code-required parking spaces or landscaped areas.
- Ground level enclosures should be tall enough to screen the equipment and match the building materials of other onsite structures whenever possible.
- Screening landscaping should also match existing, onsite landscaping if appropriate.
- For utility pole-type mounts, equipment cabinets may be mounted on the shaft if they are small enough in size to integrate with the appearance of the structure.
- In the public right of way, equipment cabinets should be sited in underground vaults. The best locations are the street and the sidewalk areas. In general the vaults should avoid landscaped areas and street trees.
- Equipment cabinets should also be sited in the rear yards of adjacent residences. Equipment cabinets should not be visible above the fence line. Wireless companies will need to negotiate land leases and easements with affected property owners.

## 3.7 Lattice Towers and Monopoles

- New lattice towers are not allowed by Bonsall because of their obtrusiveness and because monopoles satisfactorily serve the same purpose of elevating the antennas with fewer visual impacts.
- A monopole should be sited among other tall vertical structures or elements to reduce its obtrusiveness, such as, among a cluster of buildings, grove of trees, or within a power substation.
- Monopoles should be approximately the same or smaller diameter as other vertical elements in the surrounding environment. “Slim line” monopoles are preferred except when co-location of additional antennas is proposed.



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- Monopoles should be colored to match their foreground or background elements. If the sky is the background or foreground element then the monopole should be painted a flat gray color.
- Monopoles should generally be camouflaged as the artificial trees listed in Appendix A.
- Since such artificial trees appear more authentic when placed next to real trees, the planting of larger trees near the monopole may be a project requirement.
- The artificial tree should be of a form similar to the surrounding trees to which it is being visually integrated, and be constructed of materials that retain a natural appearance for the life of the personal wireless service facility.
- The artificial tree should not be significantly taller than the surrounding vertical elements (i.e., buildings, trees, structures, etc.)

## **3.8 Other Structure Mounts**

There are a host of other types of structures that are not buildings or monopoles that may be suitable for elevating antennas and around which a satisfactory personal wireless service facility can be built. This category includes: power/telephone poles, street lamps, taller pylon signs (except billboards), etc. Some of these structures may not be structurally suitable to carry such wireless facilities, so Bonsall will allow the wireless companies to fabricate suitable replacement structures. In other cases where a structure does not exist, Bonsall may allow wireless companies to design and fabricate a custom-built facility that will fit into its surroundings. Additions or changes to County-owned utility structures will require the review and approval of the County of San Diego Public Works Department.

## **3.9 Replacement Structures**

If the wireless company needs to fabricate a new structure to replace one that is not suitable for antenna mounting, then the new structure shall approximate the size, height, shape, colors and dimensions of the existing structure in order to fit the new structure into the visual landscape. Replacement public structures will need the approval of the County of San Diego Public Works Department and shall be designed and built in accordance with this Master Plan

## **3.10 Access Roads and Above Ground Facilities**

Where the construction of new wireless telecommunications facilities requires construction of or improvement to access roads, to the extent practicable, roads shall follow the contour of the land, and be constructed or improved within forest or forest fringe areas, and not in open fields. Utility or service lines shall be designed and located so as to minimize or prevent disruption to the scenic character or beauty of the area. The County may require closure of access roads to vehicles following facility construction where it is determined that site conditions warrant the same and where maintenance personnel can reasonably access the facility site on foot.



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## **4. Health & Safety Radio Frequency Radiation (RFR) or Non-Ionizing Electromagnetic Radiation (NIER)**

### **4.1 Background**

There is an ongoing debate among scientists and the general public as to the health risks associated with exposure to RFR from personal wireless service facilities. The Bonsall Sponsor Group does not have the authority to regulate personal wireless service facilities on the basis of RFR, nor does the Bonsall Sponsor Group have the authority to set exposure standards for RFR emissions from personal wireless service facilities, which has been pre-empted by the Telecommunications Act of 1996. The Telecommunications Act is very clear that the Bonsall Sponsor Group may not deny an application for a personal wireless service facility because of RFR if the facility meets the FCC Guidelines for RFR exposure. The prohibition applies only to personal wireless service facilities.

The adopted federal RFR exposure standards are embodied in FCC Guidelines published on August 1, 1996 and titled: "Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation." The FCC-adopted standards are the 1991 Institute of Electronics and Electrical Engineers (IEEE) standards that were subsequently adopted by the American National Standards Institute (ANSI) and became known as ANSI/IEEE C95.1-1992 in combination with a stricter National Council on Radiation Protection and Measurement (NCRP) standard that NCRP set in 1986.

If the Bonsall Sponsor Group suspects that RFR standards are being exceeded, an FCC Guide titled: "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance," published in June 2000, suggests that the local government first contact the facility operator, and if it still has questions about compliance, the local government should contact the FCC.

While the Bonsall Sponsor Group has no authority to regulate or enforce police powers on RFR, it appears the Bonsall Sponsor Group may review and monitor RFR for compliance with FCC Guidelines. In fact the FCC Guide previously mentioned states: "... *this document recognizes that, as a practical matter, state and local governments have a role to play in ensuring compliance with FCC's limits, and it provides guidance to assist you in effectively fulfilling that role. The twin goals of this document are: (1) to define and promote locally-adaptable procedures that will provide you, ..., with adequate assurance of compliance, while (2) at the same time, avoiding the imposition of unnecessary burdens on either the local government process or the FCC's licensees.*

### **4.2 Review of RFR Emissions for Compliance with Federal Standards**

As a general rule, the applicant should bear the entire cost associated with measuring, recording, reporting and monitoring RFR emissions associated with personal wireless service facilities. No wireless communication facility shall be located or operated in such a manner that it poses, either by itself or in combination with other such facilities, a potential threat to public health.



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To that end, no telecommunication facility or combination of facilities shall produce at any time power densities in any area that exceed the FCC-adopted standard for human exposure, as amended, or any more restrictive standard subsequently adopted or promulgated by the County, the State of California, or the federal government. Areas in the immediate vicinity of all antennas or other transmitting devices in which the FCC RF radiation exposure standards could potentially be exceeded, especially near rooftop antennas, must be clearly demarcated and/or fenced off, with warning signs in English and Spanish clearly visible.

## **4.3 Pre-Construction Measurement of Background Non-Ionizing Electromagnetic Radiation (NIER) Levels and Calculation of Predicted Post-Construction NIER Levels**

Pre-construction compliance with the FCC's NIER standards or other applicable standards shall be demonstrated for any new wireless communication facility through submission, at the time of application of: (a) baseline/ambient NIER measurements, and (b) calculations of expected NIER exposure levels during peak operation periods.

## **4.4 Initial Post-Construction Monitoring of NIER**

Initial compliance with the FCC's NIER standards shall be demonstrated for all new wireless communication facilities through submission of a report documenting initial NIER monitoring at the facility site after the commencement of normal operations. The NIER measurements shall be made, at the applicant's expense, by a qualified County-approved third-party telecommunications or radio-frequency engineer, during typical peak-use periods with measurements taken at various locations, including those from which public RF exposure levels are expected to be the highest. The report shall list and describe each transmitter/antenna present at the facility, indicating the effective radiated power of each. The report shall include field measurements of NIER emissions generated by the facility and also other nearby emission sources, from various directions and particularly from adjacent areas with habitable structures. The report shall compare the measured results to the FCC NIER standards for such facilities. The report documenting these measurements and the findings with respect to compliance with the established NIER standard, and also proof of general liability insurance for the facility, shall be submitted to the Bonsall Sponsor Group within 90-days of commencement of facility operation.

## **4.5 Noise**

Some of the wireless communication companies require mechanical ventilation to keep their equipment operating within an acceptable temperature range and generators to provide power or backup power in the event of a power outage. All of this equipment are potential noise sources and must comply with the San Diego County Noise Ordinance.

## **4.6 Falling Materials**

Antennas mounted at taller heights and the artificial branches and foliage found on a tree pole are subject to strong winds, which may cause breakage and a potential falling material hazard to persons and property at the ground level. At the county building permit stage, applicants should be prepared to provide for the artificial tree branches: an analysis of wind resistance factors, testing for material strength and stiffness, and a description of the environmental effects related to solar degradation and fatigue.



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## **5. Monitoring**

### **5.1 Ongoing Monitoring of NIER Levels and Structural Integrity/Appearance**

Every wireless communication facility authorized, shall demonstrate continued compliance with the NIER standard established by the FCC, and any NIER standards of other regulatory agencies as may become effective. By July 1st of each year, a report listing and describing each transmitter/antenna present at the facility and the effective radiated power of each shall be submitted to the Bonsall Sponsor Group. This annual report shall also include field measurements of NIER emissions generated by the facility and other nearby emission sources from various directions and particularly from adjacent areas with habitable structures and/or other locations from which public RF exposure levels are expected to be the highest, during typical peak-use periods. The operator of the facility shall hire a qualified County-approved third-party telecommunications or radio-frequency engineer to conduct the NIER measurements. The annual monitoring report must also include inspection of structural integrity, by a licensed professional structural engineer, and appearance, such as condition of branches/needles of stealth technology “monopines”, condition of screening vegetation, etc., at the service provider’s expense. This annual report must also include proof of ongoing general liability insurance for the facility.

### **5.2 Failed Compliance**

Failure to supply the required reports and proof of insurance, or to remain in continued compliance with the NIER standard established by the FCC, or other regulatory agency if applicable, or failure to maintain structural integrity and facility appearance as proposed, shall be grounds for the Bonsall Sponsor Group to request the County to perform a review of the use permit or other entitlement.

### **5.3 Abandonment or Discontinuation of Use**

All operators who intend to abandon or discontinue the use of any wireless telecommunications facility shall notify the Bonsall Sponsor Group of such intentions no less than 60 days prior to the final day of use. Wireless telecommunications facilities with use discontinued shall be considered abandoned 90 days following the final day of use. All abandoned facilities shall be physically removed by the facility owner no more than 90 days following the final day of use or of determination that the facility has been abandoned, whichever occurs first. Any abandoned site shall be restored to its natural or former condition. Grading and landscaping in good condition may remain.



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## **6. Implementation**

This section of the plan addresses how the Bonsall Sponsor Group will implement this Wireless Facilities Master Plan in conjunction with the County of San Diego's Zoning Ordinance. While all wireless service facilities will require discretionary review and approval, the Bonsall Sponsor Group will fast track its approval of applications for well-designed and sited facilities that are camouflaged, are unobtrusive in appearance to the viewing public, and otherwise meet the goals of this plan.

### **6.1 Pre-Application Review Meeting**

Prior to starting the formal application submission, a Pre-Application Review meeting shall be held with the Public Facilities Subcommittee of the Bonsall Sponsor Group. In the pre-application review meeting the applicant will receive feedback regarding facility siting and design prior to making a formal application. Any feedback given shall not constitute approval by the Bonsall Sponsor Group.

### **6.2 Submittal Information**

Applications for the installation of Wireless Facilities in the Bonsall Sponsor Group Area shall provide the following information to for Bonsall Sponsor Group not less than thirty (30) days prior to its monthly meeting. In addition, to ensure that no delay occurs in the decision process, the applicant's representative(s) at this meeting must have the technical and business knowledge to answer questions in depth about the information provided.

1. The identity and legal status of the applicant, including any affiliates.
2. The name, address, and telephone number of the officer, agent or employee responsible for the accuracy of the application information.
3. The name, address, and telephone number of the owner, and agent representing the owner, if applicable, of the property upon which the proposed wireless communication facility is to be built.
4. The address and assessor parcel number(s) of the proposed wireless communication facility site, including the precise latitude/longitude coordinates and Thomas Brothers map reference of the proposed facility.
5. The names and addresses of the record owners of all abutting property.
6. Evidence of need for the proposed new wireless communication facility shall be provided demonstrating that existing facilities in the Bonsall Sponsor Group area cannot reasonably be modified to provide adequate coverage and/or adequate capacity to the intended service area. The documentation shall include a description of the service provider's existing wireless communication facilities network in the Bonsall Sponsor Group Area. This must include existing and proposed coverage maps and a table listing facility sites/addresses, site names/identification, facility types, and precise latitude/longitude coordinates, for all existing facilities. In addition, the following information must be submitted for each of the service provider's existing facilities in the vicinity of the proposed facility site, so as to provide information sufficient for the evaluation of the need for the proposed facility:



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- Ground elevation at base of tower or structure
- Height of tower or structure
- Type of antennas
- Height of antennas on tower or structure
- The existence of space on the tower/facility for any potential co-location.

Any functional changes in the equipment after installation that affect the visual appearance shall be submitted to the BCSG Public Facilities Subcommittee for approval. The Bonsall Sponsor Group shall use this information to make a general analysis of the implications of this new installation for the location and types of future installations in the applicant's and competitors' networks as the needs of the Bonsall community increase.

## **a. The Level of Service**

The level of service provided shall be indicated in the existing and proposed coverage maps.

## **b. Compliance**

Compliance with the ANSI/IEEE C95.1-1992 standard for non-ionizing electromagnetic radiation (NIER) shall be demonstrated for any new wireless communication facility through submission, at the time of application, of:

- a) Baseline/ambient NIER measurements, utilizing the Monitoring Protocol, in the area surrounding the proposed facility made by a qualified third-party telecommunications or radio-frequency engineer, with measurements taken at various locations, including those from which public RF exposure levels are expected to be the highest;
- b) Calculations of expected NIER exposure levels at maximum power output, taking into account cumulative NIER exposure levels from the proposed source in combination with all other existing NIER transmission sources in the vicinity of the proposed project site. RF exposure calculations shall be made for various locations, including those from which public RF exposure levels are expected to be highest.
- c) A detailed description of the proposed measures to ensure that the public would be kept at a safe distance from any NIER transmission source associated with the proposed wireless communication facility, consistent with the NIER standards of the FCC or any potential future superceding standards.

## **c. A Detailed Visual Analysis**

The detailed visual analysis shall include computer photo simulations and a written description of the proposed wireless communication facility, shall be provided. Photo-simulations shall be submitted of the proposed wireless communication facility from various locations and/or angles from which the public would typically view the site. The Visual Analysis shall include an assessment of the cumulative visual impacts of the proposed facility and other existing and known/anticipated future wireless communication facilities in the area, and shall identify and include all potential mitigation measures for visual impacts, consistent with the technological requirements of the proposed telecommunication service.



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## d. An Alternatives Analysis

The applicant shall submit an alternatives analysis, which shall at a minimum:

- a) Identify all technically feasible alternative locations, and facility designs or types
- b) Address the potential for co-location with existing facilities.
- c) Explain the rationale for selection of the proposed site based on its technical and environmental merits.
- d) Include conceptual diagrams/plans of the primary alternative design and site.
- e) Document the attempt to obtain the use of the primary alternative site.

## e. Detailed maps of proposed facility site and vicinity

Signal propagation and radio-frequency studies, plots and related materials shall be prepared, clearly identified and signed by a qualified radio-frequency engineer. The following maps are required at the time of application submittal:

- a) Location Map – copy a portion of the most recent U.S.G.S. Quadrangle map, at a scale of 1:24,000, indicating the proposed tower/facility site, and showing the area within at least two miles from the proposed site.
- b) Vicinity Map – at a scale of 1"=416' (1:5,000) with contour intervals no greater than 10 feet showing the entire vicinity within a 2,500' radius of the tower/facility site, and including topography, public and private roads and driveways, buildings and structures, bodies of water, wetlands, landscape features, historic sites, and habitats for Federally or state listed threatened or endangered species (or candidate species for listed status). Draw a 1000' radius circle on the map with the proposed tower/facility at its center and indicate all habitable structures within 1,000 feet of the proposed tower/facility. Indicate property lines of the proposed tower/facility site parcel and of all abutters to the tower site parcel. Indicate any access easement or right-of-way needed for access from a public way to the tower, and names of all abutters or property owners along the access easement or who have deeded rights to the easement.
- c) Radio-frequency (RF) Radiation Propagation Study Map(s) – RF radiation emissions/exposures study of the site vicinity, at an appropriate scale, in the form of radial or tiled coverage plots, indicating estimated power densities and exposure levels at designed power output. The map should display the approximate footprints of all habitable structures within 500 feet of the proposed facility, indicating which structures are used as dwelling units, and indicating the estimated maximum possible exposure levels at the exteriors of the most affected structures.

## f. Detailed plans/diagrams of proposed facility and site

The following plans/diagrams, on 24" x 36" sheets, shall be provided at the time of application submittal:



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## A. Proposed Site Plan

- a) Proposed facility site layout, grading and utilities at a scale no smaller than 1"=40' (1:480) with topography drawn at a minimum of 10' contour intervals, showing existing utilities, property lines, existing buildings or structures, walls or fence lines, wooded areas, existing water wells, springs, and the boundaries of any wetlands, watercourses and/or floodplains.
- b) Proposed facility location, including supports and guy wires, if any, and any accessory building (communication equipment shelter or other). Indicate property boundaries and setback distances to the base(s) of the tower/facility and to the nearest corners of each appurtenant structure to those boundaries, and dimensions of all proposed improvements.
- c) Indicate proposed spot elevations at the base of the proposed tower/facility, and at the base of any guy wires, and the corners of all appurtenant structures.
- d) Proposed route for utilities, including distance from source of power, sizes of service available and required, locations of any proposed utility or communication lines, and whether underground or above ground.
- e) Limits of area where vegetation is to be cleared or altered, and justification for any such clearing or alteration.
- f) Any direct or indirect wetlands alteration proposed.
- g) Plans indicating locations and specifics of proposed screening, landscaping, ground cover, fencing, etc; any exterior lighting or signs.
- h) Plans of proposed access driveway or roadway and parking area at the tower/facility site.

## B. Proposed Facility

- a) Plans, elevations, sections and details at appropriate scales, but no smaller than 1"=10'.
- b) Two cross sections through proposed facility drawn at right angles to each other, and showing the ground profile to at least 100 feet beyond the limit of clearing, and showing any guy wires or supports. Dimension the proposed height of the facility above average grade at tower/facility base. Show all proposed antennas including their location on the tower/facility.
- c) Detail proposed exterior finish of the tower/facility, including the camouflage used to blend the facility into the environment.
- d) Indicate relative height of the facility to the tops of surrounding buildings and any vegetation, as it presently exists, and the height to which it is expected to grow.
- e) A description of the available space on the tower, providing illustrations and examples of the type and number of Personal Wireless Service Facilities which could be mounted on the structure.

## C. Proposed Communications Equipment Shelter

- a) Floor plans, elevations and cross sections at a scale of no smaller than 1/4"=1' (1:48) of any proposed appurtenant structure.
- b) Representative elevation views, indicating the roof, facades, doors and other exterior appearance and materials.



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## *D. Proposed Equipment Plan*

- a) Plans, elevations, sections and details at appropriate scales but no smaller than 1"=10'.
- b) Number of antennas and microwave dishes, as well as the exact location, of antenna(s) and microwave dishes located on a map as well as by degrees, minutes and seconds of Latitude and Longitude.
- c) Mounting locations on tower or structure, including height above ground.
- d) A recent survey of the facility site at a scale no smaller than 1"=40' (1:480) showing horizontal and radial distances of antenna(s) to nearest point on property line, and to the nearest dwelling unit.
- e) Power output, in normal use and at maximum output for each antenna and all antennas as an aggregate.

## **g. Balloon Tests**

At the direction of the Bonsall Sponsor Group, the applicant will be required to arrange to fly, or raise upon a temporary mast, a three-foot diameter brightly colored balloon at the maximum height and at the location of the proposed tower/facility. At minimum, the Balloon Test should be carried out on at least two weekend days and two weekdays, between the hours of 8 a.m. to 6 p.m., for a minimum of 10 hours each day. The dates, times and locations of the Balloon Tests, including back-up dates in case of poor visibility or strong wind conditions, should be advertised in 1/8-page display ad in the Bonsall Sun and East County Herald at 14 and 7 days in advance of the first proposed Balloon Test date. The applicant shall inform the Sponsor Group, and neighboring parcels within 500 feet of the outer boundary of the subject parcel, in writing of the dates and times of the test at least 14 days in advance of the first test date. Project descriptions should be made available to all interested passers-by at the Balloon Test site at the time of the tests.

## **h. Amendment**

The applicant shall inform the Bonsall Sponsor Group, within thirty (30) days of any change to the information required.

## **i. Recommendation to Approve or Deny Application**

The Bonsall Sponsor Group will make its decision to recommend approval or denial of the installation to the County of San Diego based on this information and the applicant's responsiveness to questions at the BCSG meeting.



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## 7. Glossary of Telecommunications Terms

**Above Ground Level (AGL):** A measurement of height from the natural grade of a site to the highest point of a structure.

**Adequate Capacity:** Capacity for wireless telephony is considered to be “adequate” if the grade of service ("GOS") is p.05 or better for median teletraffic levels offered during the typical busy hour, as assessed by direct measurement of the facility in question. The GOS shall be determined by the use of standard Erlang B calculations. As call blocking may occur in either the land line or radio portions of a wireless network, Adequate Capacity for this regulation shall apply only to the capacity of the radio components. Where capacity must be determined prior to the installation of the personal wireless services facility in question, Adequate Capacity shall be determined on the basis of a 20% busy hour (20% of all offered traffic occurring within the busiest hour of the day), with total daily traffic based on aggregate estimates of the expected traffic in the coverage area.

**Adequate Coverage:** Coverage for wireless telephony is “adequate” within that area surrounding a base station where the predicted or measured median field strength of the transmitted signal is such that most of the time, transceivers properly installed and operated will be able to communicate with the base station without objectionable noise (or excessive bit-error-rate for digital) and without calls being dropped. In the case of cellular communications in a rural environment, this would be a signal strength of at least -90 dBm. It is acceptable for there to be holes within the area of adequate coverage as long as the signal regains its strength further away from the base station. The outer boundary of the area of adequate coverage, however, is that location past which the signal does not regain.

**Affiliate:** When used in relation to an operator, another person who directly or indirectly owns or controls, is owned or controlled by, or is under common ownership or common control with the operator, or an operator’s principal partners, shareholders, or owners of some other ownership interest. When used in relation to the municipality, any agency, board, authority or political subdivision affiliated with the municipality or other person in which the municipality has legal or financial interest.

**Alternative Design Tower Structure:** Artificial trees, clock towers, bell steeples, light poles, silos and similar alternative-design mounting structures that camouflage or conceal the presence of antennas or towers. Also see Stealth Facility.

**Antenna:** Any system of wires, poles, rods, reflecting discs, flat panels, or similar devices, attached to a telecommunications tower or other structure, used for the transmission or reception of electromagnetic waves. The antennas tend to be, proportionally, a small part of the wireless telecommunications facility. Presently, five (5) types of antenna have been identified: Dish or Parabolic Antenna, Global Positioning System (GPS) Antenna, Panel Antenna, Whip Antenna, and Yagi Antenna.

**Antenna Height:** The vertical distance measured from the base of the antenna support structure at grade to the highest point of the structure. If the support structure is on a sloped grade, then the average between the highest and lowest grades shall be used in calculating the antenna height.

**Antenna Mount:** This term refers to the antenna mounting hardware and the structure, if any, that elevates the antennas above the surrounding landscape, for example, a building, monopole, lattice tower, etc. There are five (5) typical types of mounts: Ground-mount, Roof-mount, Side-mount, Tower or Monopole-mount, and Structure-mount.

**Antenna Support Structure:** Any pole, telescoping mast, tower tripod, or any other structure which supports a device used in the transmitting and/or receiving of electromagnetic waves.



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**Applicant:** A person who applies for a telecommunications facility siting permit. An applicant can be the telecommunications service provider with the owner's written permission (or other legally **designated representative**) or the **owner of the property**.

**Available Space:** The space on a tower or structure to which antennas of a telecommunications provider are both structurally able and electromagnetically able to be attached.

**Base Station:** The primary sending and receiving site in a telecommunications facility network. More than one base station and/or more than one variety of telecommunications provider can be located on a single tower or structure.

**Base Transceiver Station:** The telecommunications facility equipment housed in cabinets or an enclosure or shelter. The term is usually used for a PCS-type cell site. **Building-mount:** Antennas that are mounted to an existing structure on a building face of the roof (including rooftop appurtenances).

**Bulletin 65:** A document published by the Federal Communications Commission (FCC) Office of Engineering and Technology specifying radiofrequency radiation levels and methods to determine compliance.

**Camouflage:** A palette of techniques used to disguise, hide and conceal a personal wireless service facility from public view by blending its appearance into elements of the visual background. The term connotes the use of paint, landscaping, building materials and artificial screens in patterns that merge with the elements in the background environment.

**Carrier:** An entity or company in the business of providing personal wireless services.

**Cell Site:** A tract or parcel of land that contains a wireless telecommunications facility.

**Cellular:** A mobile telephone technology operating in the 800 MHz range of the electromagnetic spectrum.

**Cellular Service:** A wireless telecommunications service that permits customers to use mobile telephones and other communication devices to connect, via low-power radio transmitter sites, either to the public-switched telephone network or to other fixed or mobile communication devices.

**Cellular Telecommunications:** A commercial Low Power Mobile Radio Service bandwidth licensed by the FCC to providers in a specific geographical area in which the radio frequency spectrum is divided into discrete channels which are assigned in groups to geographic cells within a service area and which are capable of being reused in different cells within the service area.

**Cellular Telecommunications Facility:** Consists of the equipment and structures at a particular site involved in receiving telecommunication or radio signals from mobile radio communications sources and transmitting those signals to a central switching computer which connects the mobile unit with the land-based telephone lines.

**CEQA: California Environmental Quality Act.**

**Channel:** The segment of the radiation spectrum to or from an antenna which carries one signal. An antenna may radiate on many channels simultaneously.

**Co-applicant:** All other persons and/or entities joining with an applicant in permit application for a personal wireless service facility, including the owner(s) of the personal wireless service facility, the property owner(s), and any tenant(s) for the personal wireless service facility.

**Co-located Facility:** See Co-location.

**Co-location:** Locating wireless communications equipment from more than one provider on a single site. A co-located facility is typically comprised of a single tower or mast/pole that supports two or more antennas, dishes, or similar wireless communication devices, that are separately owned or used by more than one public or private entity.



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Co-location can consist of additions or extensions made to existing towers so as to provide enough space for more than one user, or it can consist of the construction of a new replacement tower with more antenna space that supplants an older tower with less capacity. Placing new wireless communication facilities/antennas upon existing or new structures that support other utilities, such as power poles, may also be considered co-location.

**Cobbs Protocol:** A methodology to measure/monitor radio-frequency (RF) radiation emissions and exposures, developed by bioengineer and health physicist Carroll A. Cobbs of Seattle Washington. The Cobbs Protocol is designed to test various aspects of the ambient background RF radiation levels before a tower/facility goes online and again afterward.

**Commercial Mobile Radio Services (CMRS):** As defined by Section 704 of the 1996 Telecommunications Act, any of several technologies using radio signals at various frequencies to send and receive voice, video and data. These are considered “functionally equivalent services” by the Telecommunications Act.

**Common Carrier:** An entity licensed by the FCC or a state agency to supply local and/or long distance telecommunications services to the general public at established and stated rates.

**Communication Equipment Shelter:** A structure located at a base station designed principally to enclose equipment used in connection with telecommunications transmissions.

**Communication Tower:** A guyed, monopole, or self-supporting tower, constructed as a free standing structure or in association with a building, other permanent structure or equipment, containing one or more antennas intended for transmitting and/or receiving television, AM/FM radio, digital, microwave, cellular, telephone, or similar forms of electronic communication.

**Communications Facility:** A land facility supporting antennas and/or microwave dishes that sends and/or receives radio frequency signals. Communications facilities may include structures, towers or accessory buildings.

**Coverage Plots:** See Radiated-Signal Propagation Studies.

**CPUC:** California Public Utilities Commission.

**Cross-polarized Antenna:** Panel antennas that are flush-mounted or attached very close to a shaft. Also see Dual-polarized Antenna and Tower-mount. dBm: Unit of measure of the power level of an electromagnetic signal expressed in decibels referenced to 1 milliwatt.

**Design:** The appearance of a wireless telecommunications facility, which includes materials, colors and shape.

**Directional Antenna:** An antenna or array of antennas designed to concentrate a radio signal in a particular area.

**Dish Antenna:** Any device incorporating a reflective surface that is solid, open mesh, or bar configured that is shallow dish, cone, horn, or cornucopia-shaped and is used to transmit and/or receive electromagnetic signals.

**Dual-polarized Antenna.** Panel antennas that may be flush-mounted or attached very close to a shaft. Also see Cross-polarized Antenna and Tower-mount.

**3Electromagnetically Able:** The determination that the new signal from and to the proposed new antennas will not significantly interfere with the existing signals from and to other facilities located on the same tower or structure as determined by a qualified professional telecommunications engineer. The use of available technologies to alleviate such interference shall be considered when making this determination. Enhanced Specialized Mobile Radio (ESMR): Private land mobile radio with telephone services.



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**Environmental Assessment:** The document required by the Federal Communications Commission and the National Environmental Policy Act when a personal wireless service facility is proposed in an area that may be environmentally affected by the facility. The environmental assessment must show how negative environmental impacts can be mitigated.

**Equipment Building:** See Equipment Cabinets.

**Equipment Cabinets:** Wireless telecommunication service facilities also include one (1) or more small, enclosed structures, cabinets, boxes, sheds or underground vaults near the base of the antenna mount. These structures house power connections, emergency batteries, hardwire telephone connections and sometimes ventilation equipment needed for the operation of the facility. The equipment is connected to the antennas by cable(s). The equipment is usually secured by an enclosing structure, such as a fence, shed or vault. The term “base transceiver station” is also used to describe the radio equipment in these structures used by PCS technology.

**Equipment Shelter:** See Equipment Cabinets.

**ESMR:** See Enhanced Specialized Mobile Radio.

**FAA:** Federal Aviation Administration.

**Facility:** See Telecommunications Facility.

**Facility Site:** A property, or any part thereof, which is owned or leased by one or more wireless telecommunications service providers and upon which one or more wireless telecommunications facility(s) and required landscaping are located.

**FCC:** See Federal Communications Commission.

**Federal Communications Commission (FCC):** The FCC is the United States governmental agency responsible for regulating telecommunications services. This agency issues licenses and writes federal regulations and standards governing telecommunication companies. The Telecommunications Act of 1996 granted this agency significant authority to regulate wireless telecommunications services.

**Frequency:** The number of cycles completed each second by an electromagnetic wave measured in hertz (Hz).

**Functionally Equivalent Services:** Cellular, PCS, ESMR, Specialized Mobile Radio and Paging. According to the Telecommunications Act, these five services must receive the same treatment by local government.

**GHz:** Gigahertz. One billion hertz

**Global Positioning System (GPS) Antenna:** This is a small can-shaped antenna affixed to a rod and mounted at a lower height, usually near the equipment cabinets.

**Grade of Service (GOS):** A measure of the percentage of calls which were able to connect to the base station, during the busiest hour of the day. Grade of Service is expressed as a number, such as p.05 – which means that 95% of callers will connect on their first try. A lower number (p.04) indicates a better Grade of Service.

**Ground-mount:** Any antenna with its base placed directly on the ground or that is attached to a mast or pipe, with an overall height of not exceeding sixteen (16) feet from the ground to the top of the antenna. These installations would be typically seen on foothill properties where the height of the hill provides the elevation for the antennas.

**Guyed Tower:** A communications tower that is anchored to the ground or other surface by diagonally-oriented cables. Also see Communications Tower.



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**Habitable Structure:** A structure that is or could be used as a place of residence, such as a house or habitable accessory structure, or as a place of employment, such as a commercial, industrial, or institutional building.

**Hertz (Hz):** One hertz is a unit of measurement of an electric or magnetic field which reverses its polarity at a frequency of once per second (i.e., one cycle or wavelength per second).

**Horizontal Co-location:** The horizontal orientation of personal wireless service facilities from more than one carrier on a building. Also see Co-location.

**Horizontal Separation:** The horizontal distance between one carrier's antenna array and another carrier's antenna array. See also Vertical Separation.

**Intrusive:** A term used to describe a wireless telecommunications facility that visually contrasts with its surroundings to the point of conflicting with it, but not to the extent of visually dominating the surroundings. Also see Obtrusive.

**Lattice Tower:** A self-supporting mount with multiple legs and cross bracing of structural steel.

**Least Visually Obtrusive:** With regard to wireless communication facilities, this shall refer to technically feasible facility site and/or design alternatives that render the facility the most inconspicuous relative to other technically feasible sites and/or designs. It does not mean that the facility must be completely hidden, but it may require screening or other camouflaging so that the facility is not immediately recognizable as a wireless communication facility from adjacent properties and roads used by the public.

**Licensed Carrier:** A company authorized by the FCC to construct and operate a commercial mobile radio services system.

**Location:** The area where a wireless telecommunications service facility is located or proposed to be located. References to site location shall be the exact longitude and latitude, to the nearest tenth of a second. Bearing or orientation should be referenced to true North. The term "location" differs from the term "siting".

**Major Modification of an Existing Facility:** Any increase or intensification, or proposed increase or intensification in power input or output, number of antennas, change in antenna type or model, repositioning of antenna(s), or change in number of channels per antenna above the maximum number previously approved.

**Major Modification of an Existing Tower:** Any increase or intensification, or proposed increase or intensification, in dimensions of an existing and permitted telecommunications tower or other structure designed to support telecommunications transmission, receiving and/or relaying antennas and/or equipment.

**Mean Sea Level (MSL):** A uniform reference point from which height can be measured.

**Megahertz (MHz):** One million hertz.

**Micro-Cell:** A low power mobile radio service telecommunications facility used to provide increased capacity in high call-demand areas or to improve coverage in areas of weak coverage.

**Microwave Antenna:** An antenna manufactured in many sizes and shapes that is typically used for point-to-point wireless transmission of voice or data between telecommunication site.

**Microwave Dish Antenna:** A microwave antenna with a dish like shape. Also see Microwave Antenna and Dish Antenna.

**Minor Antenna:** See Minor Wireless Communication Facility.



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**Minor Wireless Communication Facility:** A facility that meets any of the following criteria:

- a. A ground- or building-mounted receive-only radio or television antenna ten (10) feet or less tall (including mast or pipe), and six (6) inches or less in diameter or width, and, for building mounted antennas, not exceeding the height limit for noncommercial antennas in the zoning district, which is 25 feet above the zoning district's height limit for structures;
- b. A ground- or building-mounted citizens band radio antenna ten (10) feet or less tall (including mast or pipe), and six (6) inches or less in diameter or width, and, for building mounted antennas, not exceeding the height limit for non-commercial antennas in the zoning district, which is 25 feet above the zoning district's height limit for structures;
- c. A ground- or building-mounted satellite receiving dish not more than one (1) meter in diameter for a residential zoned parcel, and two (2) meters in diameter for a commercial or industrial zoned parcel; or
- d. A ground-, building-, or tower-mounted antenna operated by a federally licensed amateur radio operator as part of the Amateur Radio Service, the height of which (including tower or mast) does not exceed the height limit for non-commercial antennas the zoning district, which is 25 feet above the zoning district's height limit for structures.

**MMDS:** Multi-channel, Multi-point Distribution Services (also known as "wireless cable").  
**Modification:** The changing of any portion of a personal wireless service facility from what was approved in a previous permit.

**Monitoring:** The measurement, by the use of instruments in the field, of radiofrequency/non-ionizing radiation exposure at a site as a whole, or from individual wireless communication facilities/towers/antennas/repeaters.

**Monitoring Protocol:** The testing protocol, such as the Cobbs Protocol (or one substantially similar, including compliance determined in accordance with the National Council on Radiation Protection and Measurements, Reports 86 and 119), which may be used to monitor the emissions and determine exposure risk from existing and new telecommunications facilities.

**Monopole:** A single self-supporting vertical pole-structure erected on the ground to support one or more wireless communication antennas and connecting appurtenances.

**Monopole-Mount.** An antenna that is mounted to a monopole.

**Mount:** See Antenna Mount.

**MTSOs:** Mobile Telephone Switching Offices.

**Non-Ionizing Electromagnetic Radiation (NIER):** Radiation from the portion of the electromagnetic spectrum with frequencies of insufficient energy to break chemical bonds (approximately 1 million GHz and below), including all frequencies below the ultraviolet range, such as visible light, infrared radiation, microwave radiation, and radio frequency radiation. Ionizing electromagnetic radiation (approximately 1 million GHz and above), which can have enough energy to break chemical bonds and damage DNA, includes ultraviolet, x-ray, and gamma ray and cosmic ray radiation.

**Obtrusive:** A term used to describe a wireless telecommunications service facility that is visually dominating to its surrounding environment. This term usually applies to a facility where a new monopole or lattice tower is erected to mount the antennas. It may also apply to building-mounted or structure-mounted facilities that lack adequate camouflage.



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**Omnidirectional Antenna:** An antenna that is equally effective in all directions and whose size varies with the frequency and gain for which it is designed. **Paging:** A service that provides tone, text and limited voice messaging. Commercial paging operates on several frequencies, including narrowband PCS.

**Panel Antenna:** A flat surface antenna commonly used in cellular and PCS systems that is usually deployed in three directional sectors and used to transmit and receive signals from that sector only. These antennas usually are rectangular in shape, standing with the thin side up. They can resemble plastic or glass light casings, such as seen on streetlights, but the more typical shape is like a fluorescent light case. They are typically 4-5 feet in height, 6-12 inches in width and 6-8 inches in depth.

**Parabolic Antenna:** See Dish Antenna.

**Permit:** Embodies the rights and obligations extended by the municipality to an operator to own, construct, maintain, and operate its facility within the boundaries of the municipality.

**Personal Communications Services (PCS):** Digital wireless communications technology capable of transmitting and receiving voice, data, text and video messaging and which operates in the 1850-1900 MHz range.

**Personal Wireless Services:** These services are defined by Section 704 of the Telecommunications Act of 1996 as Unlicensed Wireless Services, Common Carrier Wireless Exchange and Commercial Mobile Radio Services. This includes Cellular, Personal Communications Services (PCS), Enhanced Specialized Mobile Radio, Specialized Mobile Radio, and Paging).

**Personal Wireless Service Facility:** As defined in the Telecommunications Act of 1996, a facility that is designed to provide personal wireless services. See also Telecommunications Facility.

**Preexisting Towers and Antennas:** Any tower or antenna for which a permit has been issued prior to the effective date of these regulations.

**PUC:** California Public Utilities Commission.

**Pylon Sign:** A sign that is erected on a tall and substantial supporting structure, but is not a billboard sign.

**Rack Antenna Configuration:** See Top Hat Antenna Configuration.

**Radial Coverage Plots:** Radial plots are the result of drawing equally-spaced lines (radials) from the point of the antenna, calculating the expected signal and indicating this graphically on a map. The relative signal strength may be indicated by varying the size or color at each point being studied along the radial; a threshold plot uses a mark to indicate whether that point is strong enough to provide adequate coverage – i.e., the points meeting the threshold of adequate coverage. Also see Tiled Coverage Plots and Radiated-Signal Propagation Studies.

**Radiated-Signal Propagation Studies:** Computer generated estimates of the signal emanating, and prediction of coverage, from antennas or repeaters sited on a specific tower or structure. The height above ground, power input and output, frequency output, type of antenna, antenna gain, topography of the site and its surroundings are all taken into account to create these simulations. They are the primary tools for determining a need and whether the telecommunications equipment will provide adequate coverage for that site. Also see Radial Coverage Plots and Tiled Coverage Plots.

**Radio Frequency (RF) Engineer:** Someone with a background in electrical engineering who specializes in the study of radio frequencies. RF engineers are licensed by the State as Professional Engineers.



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**Radio Frequency Radiation (RFR):** Radiation from the portion of the electromagnetic spectrum with frequencies below the infrared range (approximately 100 GHz and below), including microwaves, television VHF and UHF signals, radio signals, and low to ultra low frequencies. RFR is generated by wireless telecommunications service facilities.

**Repeater:** A small receiver/relay transmitter and antenna of relatively low power output designed to provide service to areas which are not able to receive adequate coverage directly from a base or primary station.

**Roof-mount:** Antennas that are mounted on the roof or rooftop appurtenances of a building.

**Scenic View:** A scenic view is a wide angle or panoramic field of sight and may include natural and/or manmade structures and activities. A scenic view may be from a stationary viewpoint or be seen as one travels along a roadway, waterway, or path. A view may be to a far away object, such as a mountain, or a nearby object.

**Search Ring:** A generally circular geographic area of a specific radius that a carrier uses to focus his search for a personal wireless service facility location.

**Self-Supporting Tower:** A communications tower that is constructed without guy wires. Also see Monopole and Lattice Tower.

**Separation:** The distance between one carrier's antenna array and another carrier's antenna array. Separation may be horizontal or vertical.

**Side-mount:** Antennas that are mounted on the side of a building.

**Siting:** The method of placing a personal wireless service facility on a specific site or property. The term differs from determining "location."

**Specialized Mobile Radio (SMR):** A group of services serving dispatch and data communication users, usually over a small geographic area. SMR operates over several frequencies in the 800 to 900 MHz range.

**Spectrum:** Relating to any transmissions or reception of electromagnetic waves.

**Stealth Facility:** Any communications facility that is designed to blend into the surrounding environment. Examples of stealth facilities may include architecturally screened roof-mounted antennas, building-mounted antennas painted to match the existing structure, antennas integrated into architectural elements, antenna structures designed to look like light poles, and structures designed to resemble natural features such as trees or rock outcroppings. Also see Alternative Design Tower Structure.

**Stealth Technology/Techniques:** Camouflaging methods applied to wireless communication towers, antennas and/or other facilities, which render them visually inconspicuous. Also see Stealth Facility.

**Structurally Able:** The determination that a tower or structure is capable of carrying the load imposed by the proposed new antenna(s) under all reasonable predictable conditions as determined by professional structural engineering analysis.

**Structure-mount:** Antennas are mounted to the top or side of a structure, other than a building, tower or monopole, such as a water tank or tall ground sign.

**System:** The communications transmission system operated by a telecommunications service provider in the municipality or region.

**Telecommunications Act of 1996:** This is a broad revision of the 1934 federal statute governing telecommunications. It is important at the local government level because it contains language that both preserves and limits the authority of local government to regulate personal wireless service facilities.



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**Telecommunications Facility:** A facility, including all associated equipment, that supports the transmission and/or receipt of electromagnetic/radio signals. Wireless communication facilities include cellular radiotelephone service facilities; personal communications service facilities (including wireless internet); specialized mobile radio service facilities and commercial paging service facilities. Components of these types of facilities can consist of the following: antennas, repeaters, microwave dishes, horns, and other types of equipment for the transmission or receipt of such signals, telecommunication towers or similar structures supporting said equipment, equipment buildings, parking area, and other accessory development.

**Telecommunications Provider:** An entity licensed by the FCC to provide telecommunications services to individuals or institutions. **Telecommunications Tower:** A mast, pole, monopole, guyed tower, lattice tower, free-standing tower, or other vertical structure designed and primarily used to support antennas that provide telecommunications services.

**Temporary Wireless Communication Facility:** Any tower, pole, antenna, etc., designed for use while a permanent wireless facility is under construction, or for a special event or conference.

**Tiled Coverage Plots:** Tiled plots result from calculating the signal at uniformly spaced locations on a rectangular grid, or tile, of the area of concern. Unlike radial plots, tiled plots provide a uniform distribution of points over the area of interest; usually the same grid will be used as different sites are examined, and it is not necessary that the transmitter site be within the grid or area of interest. As with radial plots, the graphic display or plot can be either signal strength or adequate threshold. Also see Radial Coverage Plots and Radiated-Signal Propagation Studies.

**Top Hat Antenna Configuration:** A type of tower-mount where the antennas protrude noticeably above or beyond the surface of the tower or monopole. Also see Tower-mount.

**Tower:** See Telecommunications Tower.

**Tower-mount:** Antennas are mounted on the top or side of a lattice tower, guyed tower, or a monopole. Sometimes a large and substantial framework is added so the antennas will protrude noticeably above or beyond the surface of the tower or monopole. This is referred to as a “top hat” or “rack” configuration, which is often used to accommodate more than three panel antennas at one mount. On monopoles, sometimes dual-polarized or cross polarized panel antennas are used which allows the antennas to be mounted very closely, almost flush, to the surface of the monopole.

**Unobtrusive:** A term used to describe a wireless telecommunications service facility that is not visually dominating to its surroundings. These are usually facilities mounted on buildings or other structures that are well camouflaged. This also describes facilities that are not as well camouflaged, but do not visually stand-out because of placement, shape and/or relative size of the facility compared to surrounding visual elements.

**Unlicensed Wireless Services:** Commercial mobile services that can operate on public domain frequencies and that therefore need no FCC license for each personal wireless service facility. However, an unlicensed carrier itself still needs a FCC license. Examples are Metricom and Wi-Fi.

**Vertical Co-location:** The generally vertical orientation of personal wireless service facilities from more than one carrier on a vertical mount such as a monopole or lattice tower. Also see Co-location.

**Vertical Separation:** The vertical distance between one carrier’s antenna array and another carrier’s antenna array. See also Horizontal Separation.

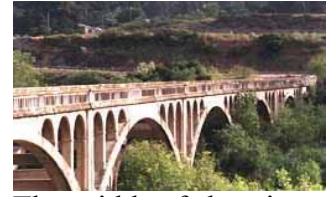


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**View Corridor:** A three dimensional area extending out from a viewpoint. The width of the view corridor depends on the focus of the view. The focus of the view may be a single object, such as a mountain, which would result in a narrow corridor, or a group of objects, such as a downtown skyline, which would result in a wide corridor. Panoramic views have very wide corridors and may include a 360-degree perspective. Although the view corridor extends from the viewpoint to the focus of the view, the mapped portion of the corridor extends from the viewpoint and is based on the area where base zone heights must be limited in order to protect the view.

**Visual Impact:** An adverse effect on the visual and/or aesthetic environment. This may derive from blocking of a view, or introduction of elements that are incompatible with the scale, texture, form or color of the existing natural or human-made landscape.

**Whip Antenna:** A vertical antenna that is typically omnidirectional. Whip antennas are typically cylindrical in shape, narrow (less than 6 inches in diameter) and long (often measure 18 inches in height or more).

**Wireless Cable:** See MMDS.

**Wireless Communication Facility:** See Telecommunications Facility.

**Wireless Telecommunications Facility:** See Telecommunications Facility.

**Yagi Antenna:** This is a directional antenna designed to “see” one site. It consists of a thin, rod-like element with half a dozen or more short cross members mounted at right angles. This antenna is mounted in a horizontal direction from its mount.



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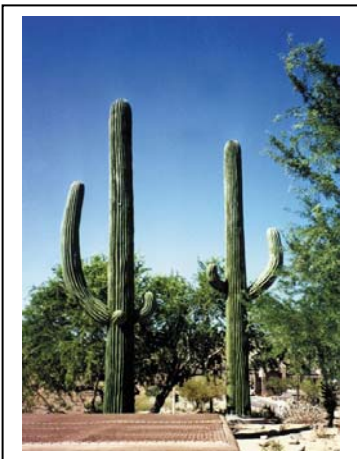
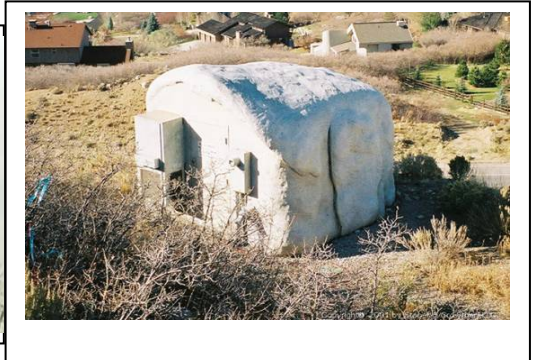


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## 7. Appendix: Recommended Camouflage Methods



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