8. WIRELESS COMMUNICATION FACILITIES

8.01.01 BACKGROUND

In addition to the regulations for wireless communication facilities (WCF) in the City Code, Piedmont has developed a series of written design standards intended to advance aesthetically pleasing facilities that fit within the community, as permitted in accordance with federal and state law.

The design standards in this chapter apply to all new WCF and to all collocations and modifications to existing WCF, including those to existing WCF that qualify under Section 6409(a). WCF that are subject to this chapter shall meet all relevant policies in the Piedmont General Plan, including:

1. "Development shall be harmonious and consistent with the surrounding neighborhood and public realm to preserve the character of the City" *(General Plan Land Use Element Policy 1.3).*
2. "Collaborate with telecommunication service providers to foster access to emerging communication and information technology for Piedmont residents" (*General Plan Community Services and Facilities Element Policy 35.8*)
3. "Ensure that the construction of infrastructure mitigates adverse visual impacts" (*General Plan Community Services and Facilities Element Policy 37.4)*.

As a part of developing design standards for WCF that are appropriate for the Piedmont community, the City has hosted multiple forums to receive input from the public, including a gallery walk event held in 2018, and booths about wireless facility design operated by City staff at the Harvest Festival and other local events (2018 and 2019). Online surveys, email blasts, presentations to City committees and commissions, and announcements in local media about the development of new WCF standards engaged thousands of households throughout the City.

Overwhelmingly, Piedmont residents prefer designs that incorporate stealth strategies that hide antennas and equipment within existing structures, decorative lampposts, or other landscape or streetscape features. Exposed antennas and wires were most disliked by participants.

Public outreach included a gallery walk event held in October 2018 (left) and a booth at the Piedmont Harvest Festival in September 2018 and 2019 (right).

8.02 CURRENT EXAMPLES

Wireless communication facilities (WCF) are located on or within existing buildings and facilities on sites throughout Piedmont and are operated by a number of telecom companies. Current examples include the Piedmont buildings and facilities in the images below.

Existing locations of WCF in Piedmont include, from left to right, atop the Piedmont Fire Station, within the bell tower at Piedmont Community Church, and on and below the PG&E transmission tower on Sandringham Road.

8.03 WCF DESIGN GOALS AND INTENT

The preferred design of wireless communication facilities has been developed from public input, research by City staff and consultants, and by closely following continuing developments as a result of changes in applicable FCC regulations, as well as related proceedings in state and federal courts. The goals of the design standards include:

1. Ensure that new and expanded WCF are concealed or well-integrated with surrounding urban infrastructure. WCF shall have minimal impact on surrounding landscaping and structures, not increase visual clutter, and shall be aesthetically pleasing. All WCF shall incorporate aspects of stealth design to the maximum extent possible (see design considerations below). All WCF shall be designed to blend in seamlessly with the surrounding neighborhood to the maximum extent possible.
2. Establish requirements for height, size, and other measurements, and identify standards for facilities located both inside and outside the public right-of-way. Conduits, cabling, and other equipment shall be integrated and concealed as a part of the requirements for the design for all facilities.
3. Establish standards for mechanically-generated noise sources, including back-up power generators and ventilation fans.
4. Encourage the use of collocation on sites in order to avoid visual clutter, any excess or duplication of facilities throughout the City, and preserve the availability of the public right-of-way for use by other necessary utilities.

8.04 DESIGN CONSIDERATIONS: STEALTH

The FCC permits jurisdictions to review modifications to existing WCF under section 6409(a) of the federal Spectrum Act of 2012 to determine if the proposed modification defeats a "concealment element." Furthermore, FCC rulings have clarified that the concealment element must make the WCF appear to be something other than a WCF to qualify. The FCC defines the term "concealment element" in § 1.6100(b)(7)(v) to mean an element that is part of a stealth-designed facility intended to make a structure look like something other than a wireless facility, and an element that was part of a prior approval. To "defeat" a concealment element under § 1.6100(b)(7)(v), a proposed modification must cause a reasonable person to view a structure's intended stealth design as no longer effective.

For the purposes of these design guidelines, the City of Piedmont defines a "stealth facility" as a WCF that includes concealment elements designed to ensure that to a reasonable person it would appear that the WCF is concealed to the extent that it appears to look like something other than a WCF.[1] The benefits of stealth design include:

- the reduction of equipment clutter throughout the community,
- the ability to regulate the aesthetic impacts of future expansion of new or existing WCF,
- other community benefits, such as integrating WCF within an essential public streetlight, public waste bin, or even as a piece of public art.

[1] The City intends that the requirement for a stealth facility be considered in light of the FCC's interpretation of a stealth facility in the 2014 Infrastructure Order, 80 FR 1237.

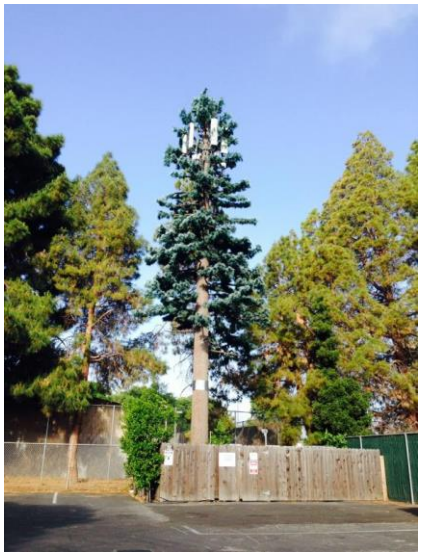
The installation of stealth WCF allows for the City to expedite the permitting process (see process section below).

Yes

Yes

Examples of stealth design include a WCF integrated with a decorative lamp post (left) and constructed within a church bell tower (right).

No



No

The examples above do not meet stealth design. On the left, the faux tree does not integrate the antennas within the structure, and the base station fencing makes it obvious that the tree is a WCF. On the right, the WCF equipment is not hidden at all and is clearly visible from the street.

8.05 WCF PERMIT PROCESSING

Table 1, State and Federal Shot Clock Time Limits

Project Type	Shot Clock
Small Cell on an existing structure in ROW	60 days
Small Cell on a new structure in ROW	90 days
Macro Cell on an existing structure	90 days
Macro Cell on a new structure	150 days
WCF Backup Power Generators	60 days

8.05.01 PROCESS: SMALL CELL FACILITIES IN THE RIGHT-OF-WAY (ROW)

WCF applications shall be processed within the shot clock time limits in the table, above. WCF Permit application requirements require WCF permit applicants to schedule an appointment with staff a minimum of 24 hours before WCF permit application submittal, as the state and federal shot clocks reduce staff's ability to assist an applicant through the application process. In addition to the appointment, materials may be shared with City planning staff for initial feedback. These preliminary reviews requested by the applicant are not a City requirement and are not subject to shot clock limits.

Projects Eligible for Ministerial Review:

Proposed small cell and DAS WCF in the public right-of-way that meet the criteria of the preferred design typology, outlined below, are subject to a ministerial permit process, once the preferred design regulations are implemented in the City Code. Ministerial applications will be processed as a Public Works Department encroachment permit application to be reviewed by staff. Projects eligible for ministerial review will be eligible for longer permit expiration time period (20 years) as an incentive to file WCF permit applications that comply with the preferred design typology.

Projects Ineligible for Ministerial Review:

Small cell and DAS facilities in the public right-of-way that do not meet the preferred design typology, and all WCF permit applications filed with the City under current WCF zoning requirements, are subject to review by the City Council. This process includes public notification and hearings. Projects that are ineligible for ministerial review are limited to 10-year permit terms (the maximum permit term under the current WCF zoning requirements).

8.05.02 PROCESS: MACROCELL FACILITIES OUTSIDE THE RIGHT-OF-WAY (ROW)

WCF applications shall be processed within the shot clock time limits in the table, above. Macrocell towers and telecommunications facilities on non-residential buildings are subject to review at public hearings of the Planning Commission and City Council, and are noticed to the public.

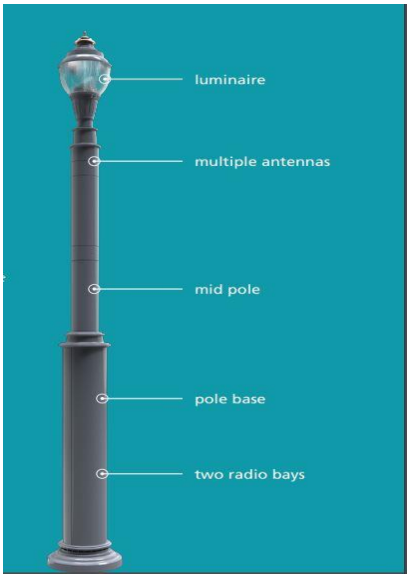
WCF permit application requirements require applicants to schedule an appointment with planning staff a minimum of 24 hours before filing an application. In addition to the required appointment, applicants may file a pre-application with staff before WCF application submittal, as the state and federal shot clocks reduce staff's ability to assist an applicant through the WCF permit application process. Preliminary pre-application reviews requested by the applicant are not a City requirement for privately-owned properties and properties owned by public agencies other than the City of Piedmont and are not subject to shot clock limits.

8.06 WCF STANDARDS IN THE PUBLIC RIGHT-OF-WAY

8.06.01 WCF Preferred Design Typology - Projects Eligible for Ministerial Review

Listed below are the design requirements for WCF project applications, meeting the preferred design typology and stealth definitions, that are only subject to a Public Works encroachment permit when located in the public right-of-way, and that do not require a WCF planning division permit under division 17.46 of the City Code:

1. An integrated lamp post or streetlight that meets the following requirements:
    a. Lamp post installation: 18 foot maximum height with a 7 foot tall base, 8 inch wide at mid-pole, 14 inch wide base.
    b. Cobra head streetlight installation: 32 foot maximum height with a 7 foot tall base, 8 inch wide at mid-pole, 14 inch at base.
2. Integration of a WCF within a covered bus stop at existing AC Transit bus stop locations. Each bus stop shall have a maximum height of 12 feet, and the WCF equipment and antenna shall be integrated within the bus stop wall or partition, of no more than 10 inches in width. Messaging shall be limited to municipal events.
3. A cylindrical information kiosk, with a 12 foot maximum height and 6 foot maximum diameter, with all equipment and antennas installed within the kiosk, in the public right-of-way at the entrances to municipal buildings such as City Hall, Community Center, and entrances to public parks. The kiosk would be used for municipal messaging, such as public notices. Kiosk shall include materials and design as shown below.
4. In all of the preferred typologies outlined above, the antenna, cabling, and all base station equipment shall be fully enclosed within the stealth facility and integrated into the design, with no indication of the equipment on its exterior. Hazard signs meeting state and federal law are permitted.
5. All preferred design typologies must also meet Public Works Standard Details for construction within the public right-of-way, as may be amended from time to time.



Yes

Yes

Yes

The pictures above show examples of preferred design typologies, specifically integration with a stealth lamp post (left), in an information kiosk (center), and a stealth (and functional) bus stop design (right).

8.06.02 WCF Permit applications Design Standards in the Public Right-of-way

Unless subject to ministerial review under section 8.06.01 above, each WCF permit application in the public right-of-way shall comply with the following design standards:

1. All equipment within the public right-of-way shall conform to all of the requirements in the City of Piedmont Public Works Standard Details, including:
    a. The maximum height of a WCF in the public right-of-way is 53 feet.
    b. WCF shall not be located within a 30-foot sight distance triangle at all intersections
    c. All WCF must not encroach over the surface of the roadway.

2. WCF within the right-of-way shall meet the standards of stealth design to the extent practical.

3. Line-mounted and/or knee bracket-mounted antennas and other equipment are strictly prohibited. Lumber shall not be used to install WCF antenna or other equipment, unless completely enclosed by shroud or radome.

4. The total of all antennas and other equipment shall be no larger than 3 cubic feet. Additional equipment shall be placed in one or more underground vaults up to 28 cubic feet total (inclusive of all equipment).

5. Facilities shall not have exposed conduit, cabling, or radios.

6. Canister shrouds or radomes extending upwards from and attached to the tops of utility poles shall not be larger than 10.25 inches in diameter and 50 inches in height.

7. Risers enclosing power and/or communication lines on the sides of utility poles shall have a maximum of one riser measuring two inches in diameter per pole

8. Streetlight WCF shall meet the following requirements:
    a. Antennas shall be top mounted and enclosed within a radome or shroud.
    b. The radome or shroud shall be tubular/cylindrical form.
    c. Antennas shall have a maximum height of 24 inches, measured from the top of the streetlight pole to the top of the antenna.
    d. Antennas shall have a maximum diameter of 8.2 inches.
    e. All cables and wiring must be concealed within the interior of the pole.
    f. Radomes or shrouds shall be no taller than 5.05 feet and no wider than 10.25 inches in diameter.

9. WCF on a utility pole shall meet the following criteria:
    a. The WCF installation shall be stealth and designed to look like the typical top end of a wooden utility pole without WCF equipment installed on it.
    b. Antennas shall be top-mounted.
    c. Radome or shroud must be no larger than 10.25 inches in diameter and 50 inches tall (including part of the shroud concealing the bracket connecting the antenna to the top of the utility pole)
    d. Antennas and radio equipment shall be the smallest possible size, and no greater that three cubic feet in volume, total.
    e. Cables and wiring shall be located within a single riser or conduit on the exterior of the pole. The riser or conduit must be painted to match the pole and must be no larger than 2 inches in diameter.
    f. Utility poles are subject to power utility standards and regulations.

10. Alternatively, instead of a streetlight or utility pole, two decorative posts from which to hang banners with municipal messaging may be used as an WCF installation.

11. WCF installations within existing underground districts must construct radios, fiber connections, power supply, meters, back-up generators, and associated equipment in underground vaults.

12. Each facility within the public right-of-way must comply with any and all applicable regulations and standards promulgated or imposed by any state, regional, or federal agency, including, but not limited to, the Federal Communications Commission (FCC) and the Federal Aviation Administration (FAA).

13. All wireless communications facilities, associated equipment and services shall be sited to maintain accessible paths of travel under Americans with Disabilities Act (ADA) and state law requirements.

14. All equipment shall be designed to withstand seismic and weather events. The WCF and related equipment shall be anchored to withstand earthquakes, high winds, or other external forces. All connections, including power lines and conduits, shall be designed to be protected from such forces as well. Structural engineering for all WCF shall be reviewed for conformance by the City Engineer.

15. Backup power generators shall only operate during commercial power outages or for maintenance purposes during normal construction hours. A temporary power source or generator during construction, repairs, or during an emergency is subject to approval by the Director of Planning & Building (or Public Works). Backup power equipment shall be located within an enclosure so that it is screened and provides noise attenuation.

16. New ground mounted facilities shall be hidden from public view and concealed with stealth concealment elements. Wireless telecommunications facilities shall have a clearly defined and enclosed base station for equipment other than antenna(s). Radios and other equipment, such as power supply and back-up power supply, shall not be mounted outside the base station enclosure. Alternatively, ground mounted facilities may also be placed in an underground vault.

17. Cabinet doors shall be designed to stay securely closed.

18. All WCF shall comply with the City's noise ordinance of a maximum 50 decibels, A weighted, within 3 feet of the WCF installation or at the nearest property line (whichever is closer), per occurrence, as stated in Chapter 8.02.020.JJ of the Piedmont Building Code. In addition, noise shall be mitigated such that noise measured at the exterior walls of the nearest habitable structure is 50 dBA per occurrence or less.

8.05.03 Location Standards for WCF in the Public Right-of-Way:

19. WCF installations must be located on an existing structure or within a new structure located a minimum of 25 feet from all existing adjacent structures.

20. A WCF shall not disrupt the street tree canopy, street tree roots, or any existing underground utility.

21. A facility shall not be located within any portion of the public right-of-way that interferes with emergency services, and pedestrian and vehicular access as determined by the City Engineer.

22. Facilities shall not be illuminated beyond downward directed streetlights attached to the same structure as the WCF.

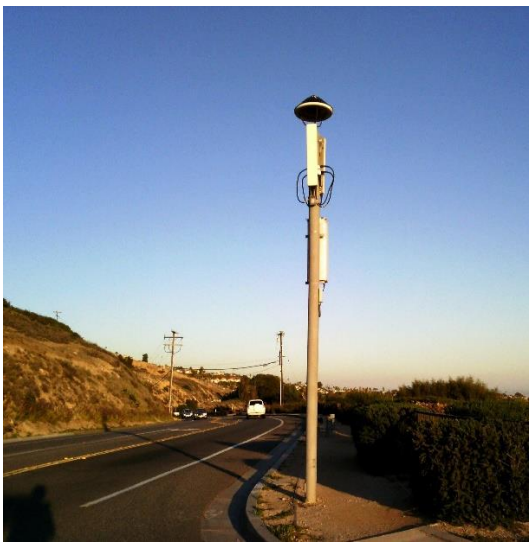
25. No WCF equipment shall be installed less than 7 feet above the surface of the adjacent walking pathway.

26. Sites within 20 feet of new or modified WCF installations shall be re-landscaped at the conclusion of construction. Landscape plan shall be reviewed by the Parks and Project Manager or their designee.

27. WCF shall be collocated to the extent practicable.

Examples:

No



Yes

The streetlight on the left does not conceal the antenna equipment, cabling, and equipment making it obvious that the installation is a WCF. The light pole on the right

has an integrated WCF that is not visible. Both photos are examples of collocated facilities.

8.07 WCF DESIGN STANDARDS FOR OUTSIDE THE PUBLIC RIGHT-OF-WAY

8.07.01 Design Standards

1. New WCF installations shall utilize stealth design to conceal the facility and modifications to existing WCF shall be required to maintain stealth design so that a reasonable persons is not aware that a facility is a WCF.

2. When mounted to an existing building, the WCF shall be designed to be integral to the original architectural style in placement, color, ornamentation, size and proportion.

3. Facilities shall not have exposed conduit, cabling, or radios.

4. When mounted to an existing structure that is not a building (e.g., a transmission tower), the antenna shall be close-mounted. Cables and conduits shall be mounted so as to appear part of the structural frame. Antennas and equipment shall have a maximum size of 36 inches tall, 14 inches long, and 6 inches wide. Radios shall be mounted directly behind antennas or located within ground-mounted enclosures.

5. New facilities, including monopole structures, shall be a maximum of 95 feet tall. The antenna shall be close-mounted, and conduits and cables shall be placed within the monopole. The pole and equipment shall be painted a color that blends with the surrounding environment.

6. Applicants are encouraged to design WCF to serve as public art or as another type of a public enhancement, such as a municipal welcome sign.

7. Each facility must comply with any and all applicable regulations and standards promulgated or imposed by any state or federal agency, including, but not limited to, the Federal Communications Commission (FCC) and the Federal Aviation Administration (FAA). Further, all wireless communications facilities, associated equipment and services shall comply with Americans with Disabilities Act (ADA) requirements.

8. All equipment shall be designed to withstand seismic and weather events. The WCF and related equipment shall be anchored to withstand earthquakes, high winds, or other external forces. All connections, including power lines and conduits, shall be designed to be protected from such forces as well.

9. Backup power equipment shall be located within an enclosure so that it is screened and provides noise attenuation. Mechanically generated noised must comply with City Code section 5.4.11 of emitting a maximum of 50 decibels at the nearest property line.

10. Ground mounted facilities shall be hidden from public view using stealth design for concealment to the maximum extent practicable. Options include placement within existing buildings, new structures built to conceal the equipment in its entirety, or underground vaults. Wireless telecommunications facilities shall have a clearly defined and enclosed base station for equipment other than the antenna(s). Radios and other equipment, such as power supply and back-up power supply, shall not be mounted outside the base station enclosure.

11. Cabinet doors shall be designed to stay securely closed.

12. Facilities shall not be illuminated unless required by the Federal Aviation Administration (FAA). Unless required by the FAA, applicants must install lights that avoid light spillover or glare impacts to adjacent properties.

8.06.02 Location Standards:

13. All WCF must preserve existing sidewalk clearances and must comply with the Americans with Disabilities Act (ADA).

14. WCF installations must be located on an existing structure or within a new structure located a minimum of 25 feet from all existing adjacent structures.

Examples:

No

Yes

On the left, the church tower fails to integrate the WCF equipment. On the right, the building successfully hides the WCF behind the parapet.

8.07 DEFINITIONS:

Terms used in these design guidelines and their definitions are as follows:

Antenna means an apparatus designed for the purpose of emitting radiofrequency (RF) radiation, to be operated or operating from a fixed location pursuant to Federal Communications Commission (FCC) authorization, for the provision of personal wireless service and any commingled information services. For purposes of this definition, the term antenna does not include an unintentional radiator, mobile station, or device authorized under part 15 of title 47 of the Code of Federal Regulations.

Base station means an authorized wireless communications between user equipment and a communications network. The term does not encompass a tower as defined in this subpart or any equipment associated with a tower.

Collocation means multiple telecom service providers using the same structure, including new and existing infrastructure. Collocation also includes the meaning as provided in 47 C.F.R. 1.6100(b)(2).

Concealment means a wireless facility that is covered, blended, disguised, camouflaged, or integrated so that the facility is not visually obtrusive. Concealment includes incorporating *stealth* design (see definition below).

Macrocell Site means any WCF that is not a small wireless facility.

Monopole means a single free-standing pole, post, or similar structure, used to support equipment associated with a wireless communication facility.

A *Shroud* is a physical barrier that encloses and conceals a WCF located atop a pole. Examples include a radome.

A *Small Cell Facility* has the same meaning as a small wireless facility, as set forth in 47 C.F.R. 1.6002(*l*).

Stealth Design means using concealment so that a wireless communications facility is designed to look like something other than a wireless tower or base station. Stealth design includes:

a. Integrating a WCF within the architecture of an existing structure;
b. Using a new structure built to conceal the WCF in its entirety, such as a bus stop shelter, stealth water tower, or clock tower.
c. Using a new architectural feature added to an existing structure to conceal the WCF in its entirety such as a protrusion on a streetlight or utility pole, a faux trash can enclosure added to an existing structure, or traffic signage added to a streetlight to cover and conceal WCF equipment.

A *Tower* is any structure built for the sole or primary purpose of supporting any Federal Communications Commission-licensed or authorized antennas and their associated facilities, including structures that are constructed for wireless communications services including, but not limited to, private, broadcast, and public safety services, as well as unlicensed wireless services and fixed wireless services such as microwave backhaul, and the associated site.

A *sidewalk vault* is an underground facility for equipment located in a cabinet beneath the sidewalk.

Wireless Communication Facilities (WCF) means any personal wireless service facility, including any antenna facility or a structure that is used for the provision of personal wireless service, whether such service is provided on a stand-alone basis or commingled with other wireless communications services.