COUNTY OF LAKE
Community Development Department
PLANNING DIVISION
Courthouse - 255 N. Forbes Street
Lakeport, California 95453
Phone (707) 263-2221 FAX (707) 263-2225

INITIAL FEES:	
MUP 18-46	$1,161.00
CE 18-71	$190.00
Sub Total:	$1,351.00
Technology recovery 2% Cost	$27.02
General Plan Maintenance Fee	$50.00
Total:	$1,428.02

Planning Division Application
(Please type or print)

Project name: Downtown Middletown
Assessors Parcel # : 024 - 452 - 07
____ - ____ - ____

Zoning: C2 (C2-DR-P-SC)
General Plan:
Receipt #
Initial:

APPLICANT:
NAME: Cellco Partnership dba Verizon Wireless
MAILING ADDRESS: c/o Complete Wireless Consulting, Inc
CITY: Attn.: Gerie Johnson, 2009 V Street
STATE: California **ZIP:** 95818
PRIMARY PHONE: 916 709-2057
SECONDARY PHONE: ( )
EMAIL: gjohnson@completewireless.net

PROPERTY OWNER (IF NOT APPLICANT):
NAME: Pacific Telephone and Telegraph Company
MAILING ADDRESS: 21347 State Hwy 175
CITY: Middletown
STATE: California **ZIP:** 95461
PRIMARY PHONE: ( ) (770) 235-5879
SECONDARY PHONE: ( )
EMAIL: Julie Overman (jo4978@att.com)

PROJECT LOCATION
21347 State Highway, 175
ADDRESS: Middletown, CA 95461

DESCRIPTION OF PROJECT:
Verizon Wireless proposes an unmanned wireless telecommunications facility to be colocated on an existing lattice tower, related ground equipment to be installed within existing facility lease area.

PRESENT USE OF LAND:
Tower facility and telephone switch

SURROUNDING LAND USES:

North:
South:
East:
West:

PARCEL SIZE(S):

Existing: 0.155
Proposed: 8' x 20' equipment lease area

Existing/Proposed Water Supply: n/a
Existing/Proposed Sewage Disposal: n/a
Fire Protection District: CALFire - South Lake County Fire Department
School District: n/a

(Resolution No. 2017-19, February 7, 2017)

At-Cost Project Reimbursement

Gerie Johnson, Land Use Planning Specialist

I, Complete Wireless Consulting, Inc., the undersigned, hereby authorize the County of Lake to process the above referenced permit request in accordance with the County of Lake Code. I am paying an initial fee of $_____ as an estimated cost for County staff review, coordination and processing costs related to my permit (Resolution No. 2017-19. February 7, 2017). **In making this initial fee, I acknowledge and understand that the initial fee may only cover a portion of the total processing costs. Actual costs for staff time are based on hourly rates adopted by the Board of Supervisors in the most current County fee schedule. I also understand and agree that I am responsible for paying these costs even if the application is withdrawn or not approved.**

I understand and agree to the following terms and conditions of this Reimbursement Agreement:

1. Time spent by County of Lake staff in processing my application and any direct costs will be billed against the available initial fee. ***"Staff time"*** **includes, but is not limited to, time spent reviewing application materials, site visits, responding by phone or correspondence to inquiries from the applicant, the applicant's representatives, neighbors and/or interested parties, attendance and participation at meetings and public hearings, preparation of staff reports and other correspondence, processing of any appeals, responding to public records act requests or responding to any legal challenges related to the application. "Staff" includes any employee of the Community Development Department.**

2. If processing costs exceed the available initial fee, I will receive invoices payable within 30 days of billing.

3. As the owner of the project location, I have the authority to authorize and I hereby do authorize the County of Lake or authorized representative(s) to make inspections at any reasonable time as deemed necessary for the purpose of review and processing this application.

4. If I fail to pay any invoices within 30 days, the County will stop processing my permit application. All invoices must be paid in full prior to issuance of the applied for permit.

5. If the County determines that any study submitted by the applicant requires a County-contracted consultant peer review, I will pay the actual cost of the consultant review. This cost may vary depending on the complexity of the analysis. Selection of any consultant for a peer review shall be at the sole discretion of the Community Development Director or his designee.

6. I agree to pay the actual cost of any public notices for the project as required by State Law and the Lake County Zoning Ordinance.

7. I may, in writing, request a further breakdown or itemization of invoices, but such a request does not alter my obligation to pay any invoices in accordance with the terms of this agreement.

8. I agree to pay all costs related to permit condition compliance as specified in any conditions of approval for my permit/entitlement including compliance monitoring.

9. I agree not to alter the physical condition of the property during the processing of this application by removing trees, demolishing structures, altering streams, and/or grading or filling. I understand that such alteration of the property may result in the imposition of criminal, civil or administrative fines or penalties, or delay or denial of the project.

10. Applicant shall defend, indemnify and hold harmless the County and its agents, including consultants, officers and employees from any claim, action or proceeding against the County or its agents, including consultants, officers or employees to attack, set aside, void, or annul the approval of this application or adoption of the environmental document which accompanies it. This indemnification obligation shall include, but not be limited to, damages, costs, expenses, attorney's fees, or expert witness costs that may be asserted by any person or entity, including the applicant, arising out of or in connection with the approval of this application, including any claim for private attorney general fees claimed by or awarded to any party against the County, and shall also include the County's costs incurred in preparing the administrative record which are not paid by the petitioner. The County shall promptly notify the applicant of any claim, action or proceeding. Notwithstanding the foregoing, the County shall control the defense of any such claim, action or proceeding unless the settlement is approved by the applicant and that the applicant may act in its own stead as the real party in interest in any such claim, action or proceeding.

11. I have checked the current Hazardous Waste and Substances Sites List pursuant to Government Code Section 65962.5(f). www.envirostor.dtsc.ca.gov/public/ The proposed project site **is** ☐ or **is not** ☒ included on the most recent list.

12. I understand that pursuant to State Fish and Games Code Section 711.4, a filing fee is required for all projects processed with a Negative Declaration or Environmental Impact Report unless it has been determined by the California Department of Fish (CDFW) that the project will have no effect on fish and wildlife. The fees are collected by the County Community Development Department, Planning and Environmental review Division (PER) for payment to the State. I understand that I will be notified of the fee amount upon release of the environmental document for the project.

13. I hereby agree that any drainage studies and/or drainage models that are provided to the County as part of the technical studies for this entitlement process will be provided with a license or other satisfactory release allowing the County to duplicate, distribute, and/or publish the studies and models to the general public without restriction. I understand that failure to provide such license or release to the satisfaction of the County may result in comment that the study and or model is inadequate to support the entitlement request.

The signature(s) below signifies legal authority and consent to file an application in accordance with the information above. The signature also signifies that the submitted information and accompanying documents are true and accurate, and that the items initialed above have been read and agreed to.

Note: This agreement does not include other agency review fees or the County Clerk Environmental Document filing fees.

APPLICATIONS WILL NOT BE ACCEPTED WITHOUT SIGNATURE(S) OF LEGAL PROPERTY OWNERSHIP OR OFFICIAL AGENT/AUTHORITY TO FILE (circle one)

Ownership **Must Attach Evidence* | Contract to Purchase* | (Letter of Authorization*) | Power of Attorney*

Name of Property Owner or Corporate Principal Responsible or Appointed Designee for Payment of all At-Cost Project Reimbursement Fees:

_____

(*Please Print*)

Name of Company or Corporation (*if applicable*):

Gerie Johnson, Land Use Planning Specialist, Complete Wireless Consulting, Inc.

(*Please Print*)

Mailing Address of the Property Owner or Corporation/Company responsible for paying processing fees:
(If a Corporation, please attach a list of the names and titles of Corporate officers authorized to act on behalf of the Corporation)

Name:* Gerie Johnson, Land Use Planning Specialist Date: September 25, 2018

Email address: gjohnson@completewireless.net Phone Number: (916) 709-2057

2009 V Street, Sacramento, CA 95818

_____ September 25, 2018

Signature of Owners/Agent* Name ***Date***

_____ September 25, 2018

Signature of Applicant ***Date***

(Resolution No. 2017-19, February 7, 2017)

13. I hereby agree that any drainage studies and/or drainage models that are provided to the County as part of the technical studies for this entitlement process will be provided with a license or other satisfactory release allowing the County to duplicate, distribute, and/or publish the studies and models to the general public without restriction. I understand that failure to provide such license or release to the satisfaction of the County may result in comment that the study and or model is inadequate to support the entitlement request.

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Ownership Contract to Purchase* Letter of Authorization* Power of Attorney*

**Must Attach Evidence*

Name of Property Owner or Corporate Principal Responsible or Appointed Designee for Payment of all At-Cost Project Reimbursement Fees:

_____

(*Please Print*)

Name of Company or Corporation (*if applicable*):

_____

(*Please Print*)

Mailing Address of the Property Owner or Corporation/Company responsible for paying processing fees:
(If a Corporation, please attach a list of the names and titles of Corporate officers authorized to act on behalf of the Corporation)

Name:* _____ Date: _____

Email address: _____ Phone Number: _____

_____ _____

Signature of Owners/Agent* Name ***Date***

Scott Stewart 4/2/18

Signature of Applicant ***Date***

Scott Stewart, Dir Engineering Northern Calif

(Resolution No. 2017-19, February 7, 2017)

From:	Gerie Johnson
To:	Mark Roberts
Subject:	Re: Support Letter (MUP18-46 and VR19-02) "Downtown Middletown"
Date:	Wednesday, May 1, 2019 11:16:07 AM
Attachments:	RF Engineer"s Statement Support Letter (MUP18-46 & VR 19-02).pdf

Dear Mr. Roberts,

Please see the attached letter. To respond to your message below - there is no 5G plan for this site as currently designed.

Best regards,

Gerie Johnson, *Land Use Planning Specialist*
Complete Wireless Consulting, Inc.

(916) 709-2057
(916) 313-3730 fax
GJohnson@completewireless.net
2009 V Street
Sacramento, CA 95818

From: Mark Roberts <Mark.Roberts@lakecountyca.gov>
Sent: Wednesday, April 24, 2019 10:26 AM
To: Gerie Johnson <GJohnson@completewireless.net>
Subject: additional questions

Is this a 5 g tower, I am getting comments regarding a 5 g tower and I want to make sure the general public is aware of what type of tower it is

Mark Roberts – Senior Planner

Lake County – Community Development Department
255 N. Forbes Street, Lakeport, CA 95453
County Website: www.lakecountyca.gov
Phone: (707) 263-2221

NOTARY ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document, to which the certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA

COUNTY OF Contra Costa

On April 2, 2018 before me, ARKruse-Ludtke, a Notary Public, personally appeared Scott Stewart who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public

A. R. KRUSE-LUDTKE
Commission # 2104180
Notary Public - California
Contra Costa County
My Comm. Expires Mar 22, 2019

Place Notary Seal Above

COMPLETE
Wireless Consulting, Inc.

September 25, 2018
Hand Delivered

Planning Department
Community Development
255 N. Forbes Street
Third Floor, RM 323
411 East Kern Avenue
Lakeport, California 95453

Wireless Telecommunications Planning Application (Minor Use Permit)

Re:	**Verizon Project:**	**Downtown Middletown**
	Situs:	**21347 State Highway 175, Middletown, California 95461**
	APN:	**024-452-07**

Dear Sir or Madame,

This package is intended as a formal application for an unmanned Verizon Wireless telecommunications facility at the above referenced location. All materials are included as required by the County's *Application Checklist* and the County of Lake's Development Standards and Municipal Code.

Enclosed please see the following:

1. Filing Fee: [paid via Credit Card (over-the-counter);
2. **Planning Application**;
3. **Letter of Authorization**;
4. ***Indemnification Agreement (included in Planning Application)***;
5. Appendix A ("Categorically Excluded – RF Emissions);
6. Site Photographs;
7. Photo-simulations;
8. Coverage Maps;
9. Environmental Noise Analysis;
10. Parcel Map;
11. (8) Copies - Site Plans 24" x 36" (Zoning Drawings); and
12. Underlying Use Permit.

I am the main point of contact for this Application. Should you have any questions or comments regarding the submittal or need additional materials, I can be reached at (916) 709-2057 or via email at: gjohnson@completewireless.net.

Respectfully,
Gerie Johnson, Land Use Planning Specialist

www.completewireless.net

2009 V Street
Sacramento, CA 95818

COUNTY OF LAKE
COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division
Courthouse - 255 N. Forbes Street
Lakeport, California 95453
Telephone 707/263-2221 FAX 707/263-2225

File #: _____
AP#: _____
Applicant: _____

PLANNING DIVISION
SUPPLEMENTAL DATA FORM

The following supplemental information is required for all applications requiring environmental review in accordance with the California Environmental Quality Act (CEQA). Please answer the following questions as thoroughly as possible. If questions do not apply to your project, indicate by writing "N/A" or check "no". Use separate sheets of paper if necessary. **IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE LAKE COUNTY PLANNING DIVISION.**

I. Project Description

Project Name: Downtown Middletown
Address of Project: 21347 State Highway 175, Middletown, California 95461
Description of objective of project and its operational characteristics:
Proposed unmanned wireless telecommunications facility to be colocated on an existing lattice tower; related ground equipment to be installed within existing facility lease area.

Type of business: Unmanned wireless telecommunications facility
Product or service provided: Wireless telecommunications facility

Hours of operation Unmanned facility
Days of operation n/a
Number of shifts (normal) n/a
Employees per shift (normal) n/a
Number of shifts (peak) n/a
Employees per shift (peak) n/a
Number of deliveries per day n/a
Number of pick-ups per day n/a
Number of customer per day n/a
Lot size n/a
Number and type of company vehicles A Verizon service technician will typically visit the facility once or twice a month for maintenance visits. The visits will generally last approximately 30 minutes.

Floor area of existing structures n/a
Proposed floor area 8' x 20' lease area
Number of parking spaces n/a
Number of floors n/a
Type of loading facilities n/a
Additional relevant information Verizon proposes to colocate on an existing facility operated by AT&T Mobility

II. Will the project involve any of the following? If yes, please explain on separate sheet.

		YES	NO
1.	**Building or grading on steep slopes?**	___	XX
2.	**Extensive grading?**	___	XX
3.	**Building on fill or expansive soils?**	___	XX
4.	**Change in dust, ash, smoke, fumes or odors?**	___	XX
5.	**Alter any lakeshore, drainage course or waterway?**	___	XX

		YES	NO
6.	Use of water well or surface water diversion?	____	XX
7.	Do portions of the site periodically flood?	____	XX
8.	Alteration of site drainage?	____	XX
9.	Result in loss of wetland or streamside vegetation?	____	XX
10.	Reduce acreage of any agricultural croplands or soils?	____	XX
11.	Include removal of trees or large amounts of brush?	____	XX
12.	Increase noise or vibration on or off site?	____	XX
13.	Be substantially different in size or character from surrounding development?	____	XX
14.	Have either a notice of violation or citation been issued concerning the project?	____	XX
15.	Could the project be controversial?	____	XX
16.	Substantially increase energy use?	____	XX
17.	Is there a risk of an explosion or release of hazardous substances in case of an accident?	____	XX
18.	Result in the loss of existing housing units?	____	XX
19.	Generate substantial additional traffic?	____	XX
20.	Increase traffic hazards to motor vehicles, bicyclists or pedestrians?	____	XX
21.	Involve the use of toxic or hazardous substances, flammables or explosives?	____	XX
22.	Expose people to untreated or partially treated human wastes or chemical pollution?	____	XX
23.	Change a scenic view or vista from existing residential areas, or public lands or roads?	____	XX
24.	Involve large outdoor areas to be lit at night?	____	XX
25.	Do the site or buildings have any archaeological or historical significance?	____	XX
26.	Is the project part of a larger project or series of projects?	____	XX

USE PERMIT APPLICATION CHECKLIST

Please submit the following items with all minor and major use permit applications. Some specific types of information may not apply to your project. A complete application will ensure its prompt processing. If you have any questions, please contact the Planning Division.

XX 1. Completed standard Planning Division application.

XX 2. Completed Supplemental Data Form as provided by the Planning Division for all projects requiring environmental review in accordance with the California Environmental Quality Act (CEQA).

XX 3. Application fee.

XX 4. Eight copies of a site plan at a legible scale. Please include a reduced copy of the site plan, no larger than 11 x 17 inches.

____ 5. For projects that do not comply with any General Performance Standards of the Lake County Zoning Ordinance Article 41, a discussion of all exceptions and the reasons for all exceptions.

____ 6. Other pertinent data as required by the Planning Division.

Optional:

XX 7. Photographs of the site.

PROJECT SUPPORT STATEMENT
VERIZON WIRELESS

SITE NAME:	**Downtown Middletown**
LOCATION:	**21347 State Highway 175, Middletown, California 95461**
APN:	**024-452-07**

Introduction

Verizon Wireless is seeking to improve communications services to residences, businesses, public services, and area travelers in Middletown and greater Lake County, California. Verizon maintains a strong customer base in Middletown and strives to improve coverage for both existing and potential customers. The proposed facility is needed to improve Verizon coverage near Main Street, Highway 175, Highway 29 and surrounding area, by closing a significant gap in coverage and offloading existing facilities nearby. This project will expand Verizon's network and improve call quality, signal strength, and wireless connection services in Middletown. The improved wireless service will benefit residents, local businesses, tourists, commuters, and public safety communications systems in the County of Lake, including police, fire, and medical services.

Location/Design

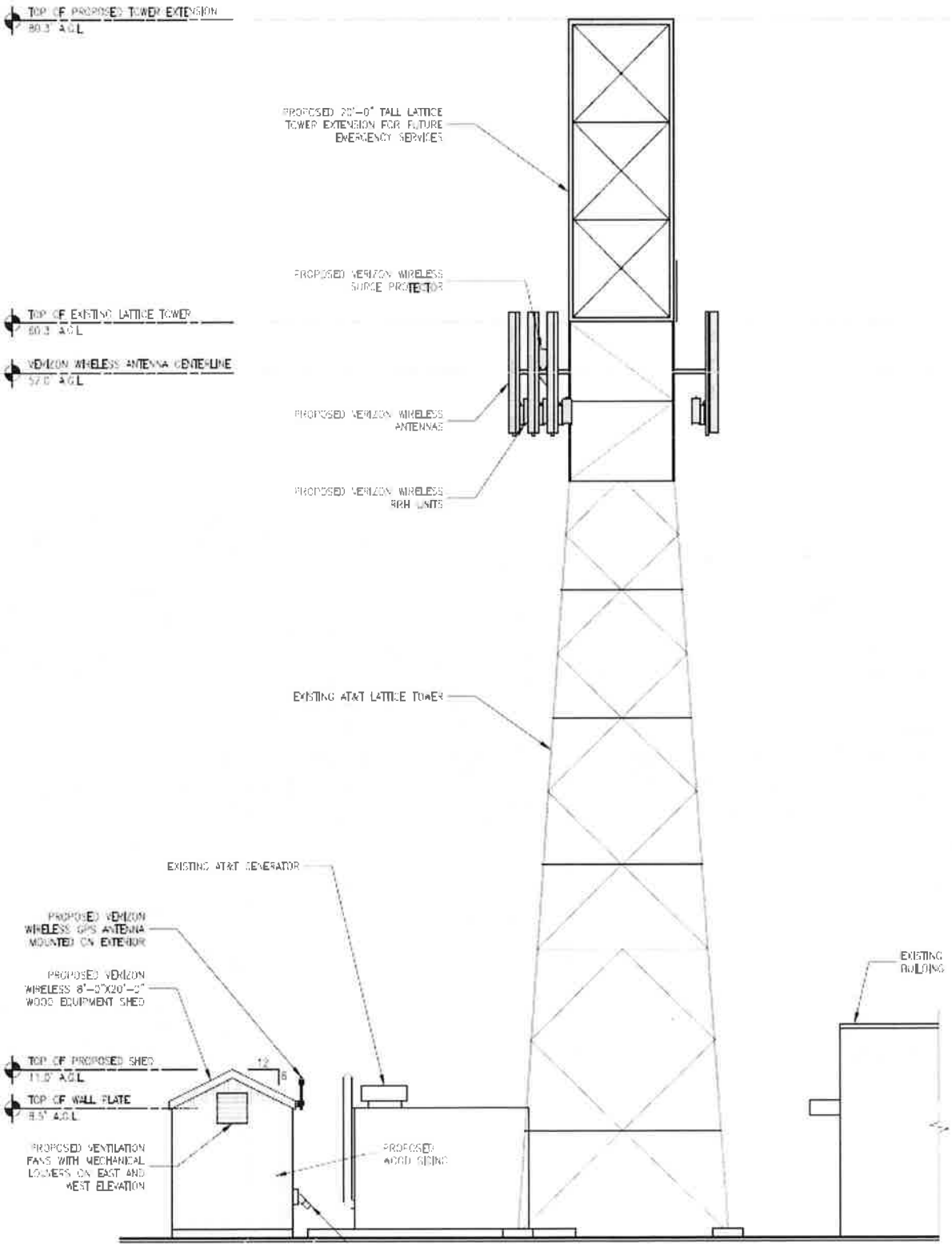
Verizon Wireless proposes to co-locate an unmanned wireless communications facility on an existing lattice tower located at 21347 State Highway 175. The property is located in the Community Commercial District (C-2). The existing lattice tower is owned by AT&T. The immediate surrounding area is developed with commercial, public, and residential properties and land use.

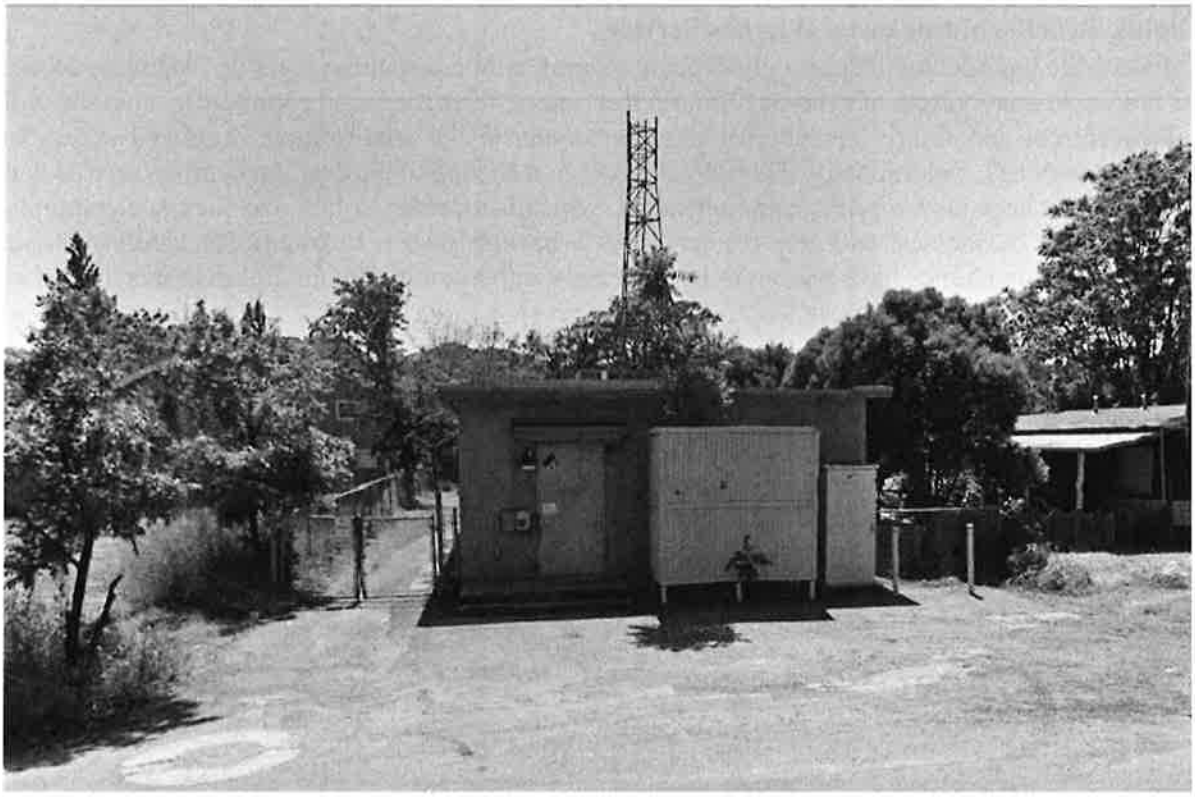
Attachment 2

Project Support Statement – Verizon Wireless 'Downtown Middletown"

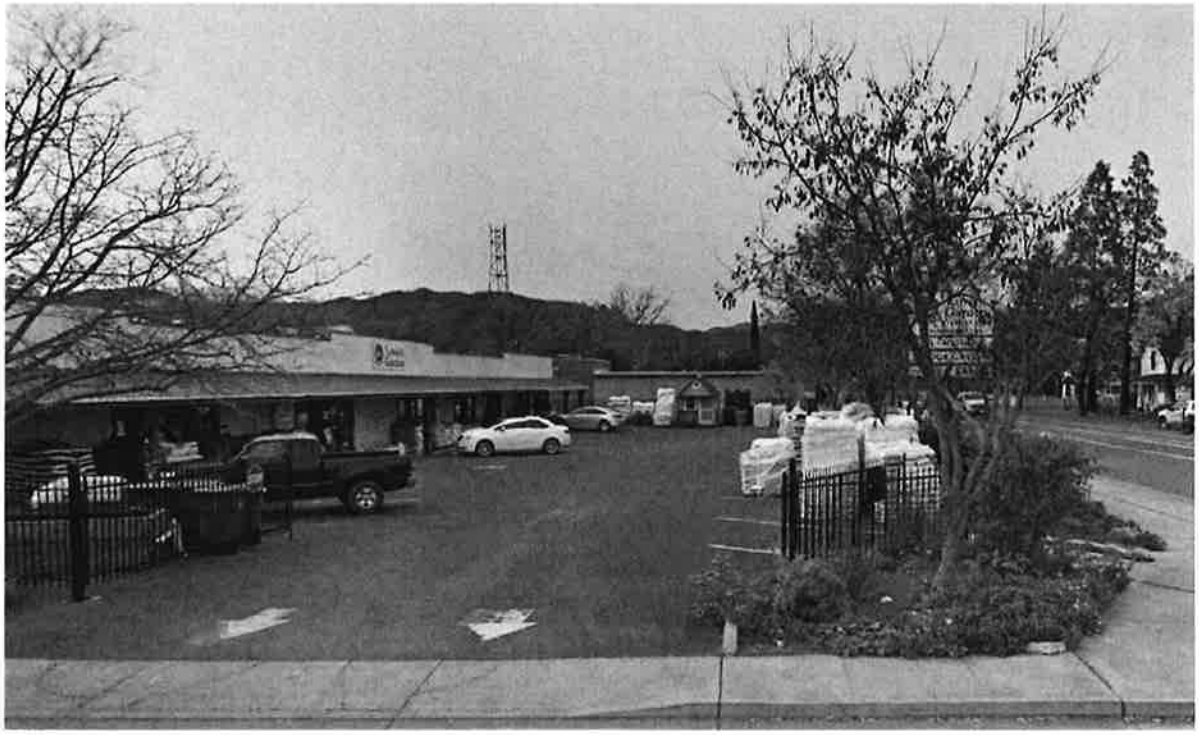
Project Description

The proposed site design includes nine (9) antennas (three (3) antennas per sector), mounted at a 57' centerline on the existing tower. The proposed ground equipment will be enclosed within an 8' x 20' wood equipment shed, within the existing footprint of the AT&T lease area. Verizon will use the existing access route and entrance gate when accessing the facility.





Google Earth View of 21347 State Highway 175, Middletown, California 95461



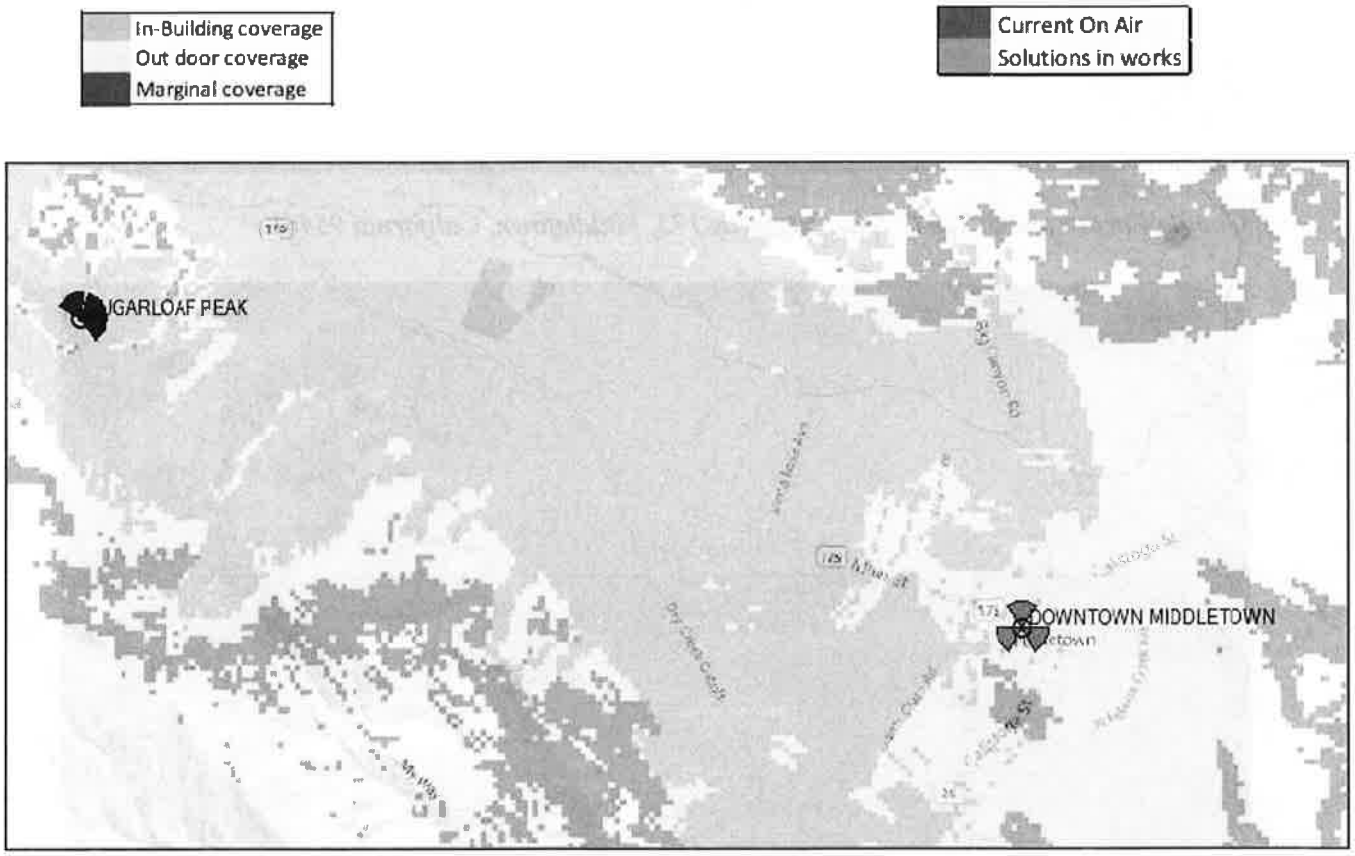
Public Benefits of Improved Wireless Service

Modern life has become increasingly dependent upon wireless communications. Wireless access is critical to many facets of everyday life, such as safety, recreation, and commerce. This site will allow current and future Verizon Wireless customers in the area to have improved access to wireless services. Additionally, this site will serve as a backup to the existing landline service and will provide improved wireless communication, which is essential to first responders, community safety, local businesses, and area residents. As a backup system to traditional landline phone service, mobile phones have proven to be extremely important during natural disasters and other catastrophes.

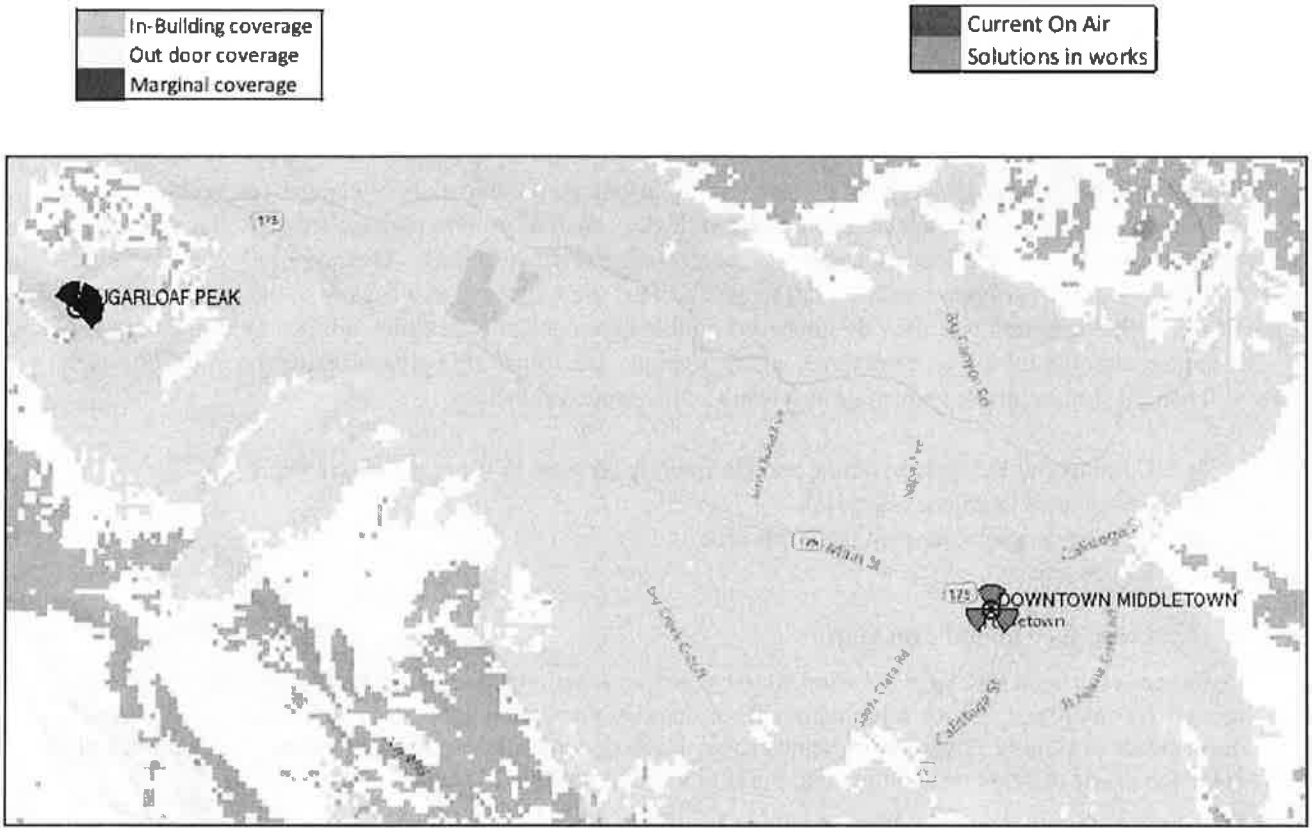
Coverage Maps

Coverage is best shown in coverage maps. When preparing coverage maps, Verizon engineers use tools that take into account topography (including terrain, vegetation), building types, and site specifics to model predictions of the existing coverage and what to expect to see with a proposed facility. It is important to point out that these coverage maps are different than the Search Ring.

Before:



After:



As can be seen in the **Coverage Maps** (above), the proposed facility is needed to minimize an existing coverage gap in this area. The attached RF Coverage Maps depict the existing coverage situation around the project site, with maps depicting 1) existing coverage without the proposed facility and 2) network coverage with the proposed facility, These Coverage Maps display a stark contrast in coverage, since existing conditions lack sufficient Verizon wireless coverage due to the inadequacy of the surrounding site at covering the targeted service area.

Verizon's existing facility cannot adequately serve customers in the desired area of coverage or address rapidly increasing data usage. The site will help to close the gap in coverage and help address rapidly increasing data usage driven by smart phone and tablet usage. Besides typical personal mobility use, customers also use the network for emergency and public safety services.

The maps also show predicted coverage based on signal strength in the vicinity of the site if the antennas are placed as proposed in the Application and Site Plans. As shown in the Maps, the proposed site closes the significant service coverage gap.

Service Objective

Statements Related to Need

Reliable and robust wireless networks are an increasing importance with the growth and use of cellular phones and data driven devices. Especially in an area, with a moderate mix of commercial, recreational, residential, employment, and transportation uses that rely on the newest and fastest communication methods.

Modern life has become increasingly dependent on instant communication. No longer just a personal and social convenience, wireless telecommunication devices such as mobile phones, smartphones and tablets have become an important tool for business, commerce and public safety. The proposed Verizon facility will provide service 24 hours a day, 7 days a week. This site will serve as a backup to the existing landline service in the area and will provide improved mobile communications, which are essential to emergency response, community safety, commerce, and recreation. The following wireless telecommunications users will benefit from improved coverage as a result of the proposed facility:

- Commercial businesses, public and community services in the area, and travelers
- Safety and Emergency Services
- Employees and visitors in the target area
- Residences

Coverage – Significant Gap

Coverage is the need for expanded wireless service in an area that has either no service or poor service. The request for improved service often comes from our customers emergency services personnel. While this once meant providing coverage in vehicles, as usage patterns have shifted this now means improving coverage inside of retail and commercial buildings and in residential areas as well.

The choice of a wireless telecommunications facility at this location was determined due to a number of factors, taking into account the needs of Verizon's network and the community values as expressed in the County's Code. The proposed facility will fill a gap in coverage in the Middletown area, including coverage enhancement and capacity to support the local businesses and residences in the area.

Capacity – Significant Gap

Capacity is the need for more wireless resources. This could mean that customers cannot make/receive calls or could have trouble getting applications to run. A site short on capacity could also make internet connections time out, or delay information to emergency response personnel.

The objective of the proposed facility is to provide capacity relief to the existing overloaded facility ("Sugarloaf Peak"). This is the closest Verizon facility to the proposed location. The proposed facility is intended to provide capacity relief, which is the need for more bandwidth of service. A telecommunications site can only handle a limited number of voice calls, data mega bites, or total number of active users. When any one of these limits are met, the user experience within the coverage area of an existing facility quickly degrades during the busier hours of use.

In order to achieve this service objective, VZW identified a potential candidate "Search Ring". A Search Ring is a circle on a map that is determined by Verizon's Radio Frequency Engineer ("RF"). The circle identifies the geographic area within which the proposed facility must be located to satisfy the intended service objective. In creating the Search Ring, the RF Engineer takes into account many factors, such as topography, proximity to existing structures, current coverage, existing obstructions, etc.

For a visual representation of the Search Ring, see the image below. The vast majority of the search area identified to meet VZW's coverage objectives is comprised of land that is zoned Residential District, which limits the opportunities available for wireless facilities in this area.

Zoning Map

Alternative Site Analysis

The location of a wireless telecommunications facility to fulfill the above-referenced service objective is dependent upon many different factors, such as topography, zoning regulations, existing structures, co-location opportunities, available utilities, access, construction, and a willing landlord. Wireless communication is a line-of-sight technology that requires facilities to be in relative close proximity to the wireless handsets in order to be served. Each proposed site is unique and must be investigated and evaluated on its own terms. Verizon strives to minimize visual and noise impacts for each facility and seeks to incorporate ways to preserve the local community character to the greatest extent feasible at all stages of site selection for a wireless telecommunication facility.

The site selection process for this proposed facility began in September 2016 with the issuance of the above-referenced Search Ring. When identifying feasible wireless facility locations, VZW first looks for co-location opportunities on existing towers, which could potentially allow for the satisfaction of the necessary coverage objectives.

Alternative Sites Investigated

Joseph Sullivan	20830 S. State Hwy 29 Middletown, CA	38°45'27.19"N	122°36'15.73"W	Property Owner was interested, but the location was ranked deemed by Radio Frequency Engineer as insufficient.
Kabage	21050 Santa Clara Rd. Middletown, CA	38°45'15.92"N	122°37'9.54"W	Property Owner was interested, and a site visit was conducted, but it was concluded that the zoning setbacks eliminated this site as a possibility.
Crown Castle Colo	21050 St. Helena Creek Rd. Middletown, CA 95461	38°45'5.70" N	122°36'14.00"W	Site ranked by Radio Frequency Engineer as insufficient.
PG&E Location		38°45'9.97" N	122°36'32.34"W	Site ranked positively by Radio Frequency Engineer, but site visits determined there was insufficient space for a facility.
County	21281 Stewart St. Middletown, CA	38°44'59.33"N	122°37'11.02"W	No towers on ridgelines. Location prohibited by zoning regulations.
Browning	20572 Big Canyon Rd. Middletown, CA	38°45'36.82"N	122°36'40.31"W	Property Owner unresponsive after multiple attempts. Location prohibited by zoning regulations and/or due to location within flood zone.
Behn	21050 St. Helena Creek Rd. Middletown, CA	38°45'11.68"N	122°36'29.13"W	Property Owner unresponsive after multiple attempts.

Miller	16636 Butts Canyon Rd. Middletown, CA	38°45'15.41"N	122°36'1.41"W	Property Owner unresponsive after multiple attempts.
Peters	21400 St. Helena Creek Rd. Middletown, CA	38°44'50.69"N	122°36'36.16"W	Property Owner unresponsive after multiple attempts.
Velloo	21016 S. State Highway 29	38°45'16.73"N	122°36'45.69"W	Property Owner unresponsive after multiple attempts.
Middletown High School	20932 Big Canyon Rd. Middletown, CA 95461	38°45'31.56"N	122°36'47.48"W	Lease negotiations failed due to lack of response and/or slow response times from High School/ School District.
Fire	21121 Highway 175 Middletown, CA	38°45'12.04"N	122°37'18.51"W	Property Owner was interested and candidate was investigated with site visits, but the zoning restrictions made this site ultimately not feasible.

County of Lake Zoning Ordinance

Article 71 – Regulation for the Placement of Communications Towers and Antennae

Section 71.8 (a)(2) - General Development Standards for all Wireless Telecommunication Facilities:

> **Co-location is required when feasible** and when it minimizes adverse effects related to land use compatibility, visual resources, public safety and other environmental factors. Co-location is not required when it creates or increases such effects and/or technical evidence demonstrates to the satisfaction of the Community Development Director that it is not feasible due to physical, spatial, or technological limitations. Fiscal constraints or competitive conflicts are not considered justifiable reason for not co-locating a new facility where opportunity for co-location exists.

Section 71.13 – Findings for Approval:

> In addition to the applicable findings of Sections 50.4 and 51.4 of the Zoning Ordinance for approval of minor and major use permits, the following findings shall be made for approval of wireless telecommunications facilities:
>
> (a) That the development of the proposed wireless communications facility will not significantly affect any public viewshed, scenic corridor or any identified environmentally sensitive area or resource as defined in the Lake County General Plan or Area Plans.

(b) That the site is adequate for the development of the proposed wireless communications facility and that the applicant has demonstrated that it is the least intrusive for the provision of services as required by the FCC.

(c) That the proposed wireless communication facility complies with all of the applicable requirements of Article 71 of the Lake County Zoning Ordinance.

(d) That the subject property upon which the wireless communications facility is to be built is in compliance with all rules and regulations pertaining to zoning uses, subdivisions and any other applicable provisions of this Title and that all zoning violation abatement costs, if any have been paid.

Safety Benefits of Improved Wireless Service

Verizon Wireless offers its customers multiple services such as voice calls, text messaging, mobile email, picture/video messaging, mobile web, navigation, broadband access, V CAST, and E911 services. Mobile phone use has become an extremely important tool for first responders and serves as a back-up system in the event of a natural disaster. Verizon Wireless will install back-up batteries at this facility to ensure quality communication for the surrounding community in the event of a natural disaster or catastrophic event. These batteries will be fully contained within equipment cabinets in the lease area and will provide power to the facility in the event that local power systems are offline.

Maintenance and Back-Up Batteries

Back-up batteries play a vital role in Verizon's emergency and disaster preparedness plan. In the event of a power outage, Verizon Wireless communications equipment will transition to the back-up batteries. The batteries can run the site for several hours depending on the demand placed on the equipment. Back-up batteries allow Verizon Wireless's communications sites to continue providing valuable communications services in the event of a power outage, natural disaster, or other emergency. Following construction, Verizon will install a small sign on the security fence indicating the carrier contact information and a 24-hour emergency telephone number.

A Verizon technician will visit the site approximately once a month to perform routine maintenance at the facility. The visits typically last 30 minutes.

Construction Schedule

The construction of the facility will be in compliance with all local rules and Lake County Ordinances. The crew size will range from two (2) to ten (10) individuals. The construction phase of the project will last approximately two (2) months and will not exceed acceptable noise levels.

Lighting

Unless tower lighting is required by the FAA the only lighting on the facility will be a down-shielded work light with a timer, located outside the equipment cabinets, which will be used by the Verizon technician during routine maintenance visits.

Compliance with FCC Standards

This project will not interfere with any TV, radio, telephone, satellite, or other signals. Any interference would be against federal law and a violation of Verizon Wireless's FCC license.

Notice of Actions Affecting Development Permit

In accordance with California Government Code Section 65945(a), Verizon Wireless requests notice of any proposal to adopt or amend the: general plan, specific plan, zoning ordinance, ordinance(s) affecting building or grading permits that would in any manner affect this development permit. Any such notice may be sent to Attn.: Gerie Johnson, Land Use Planning Specialist, Complete Wireless Consulting, Inc., 2009 V Street, Sacramento, California 95818.

Contact Information:

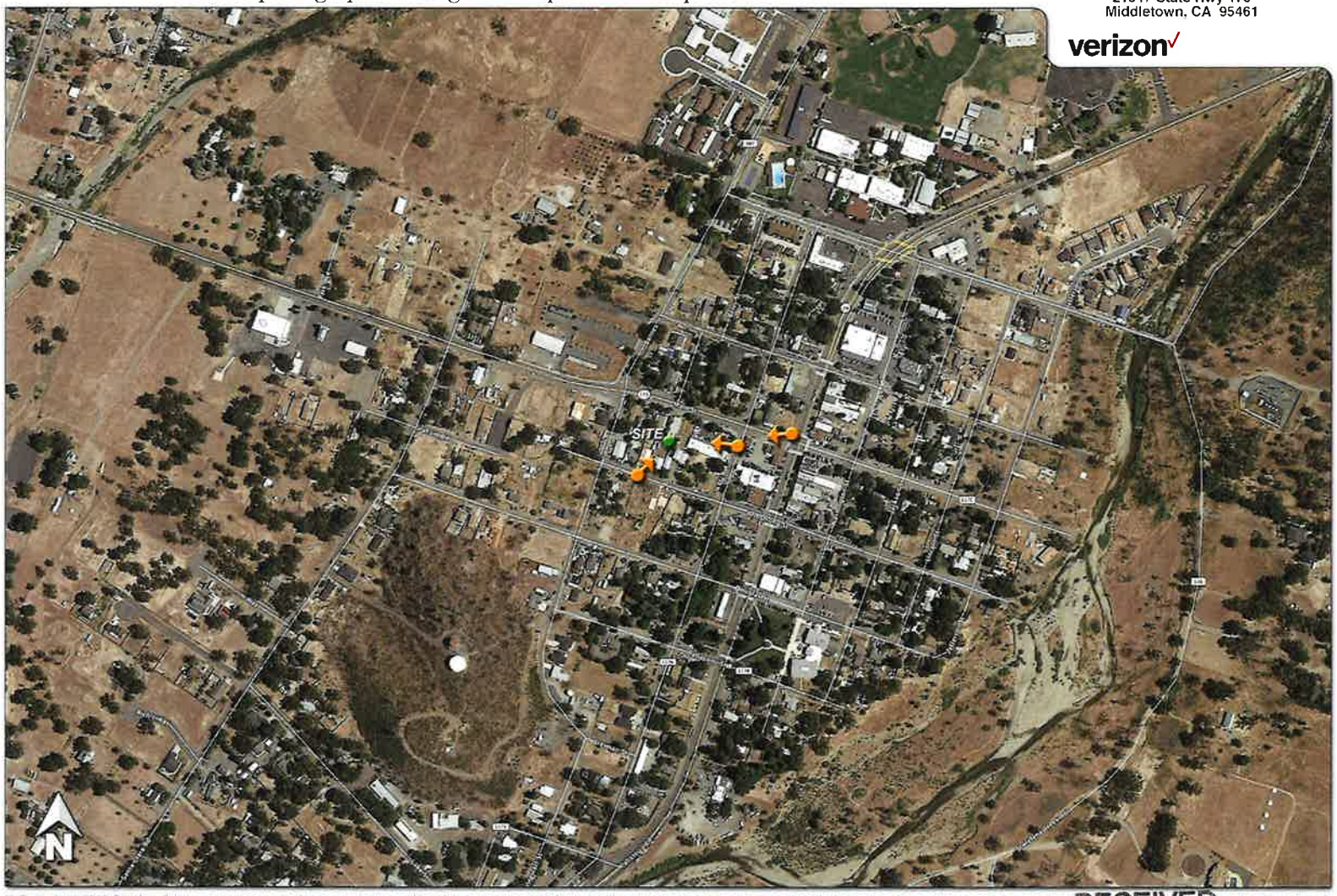
Applicant:	Verizon Wireless c/o Complete Wireless Consulting, Inc. Attn: Gerie Johnson Land Use Planning Specialist Complete Wireless Consulting, Inc. 2009 V Street Sacramento, California 95818 (916) 709-2057
Verizon Wireless:	c/o Complete Wireless Consulting, Inc. Attn: Gerie Johnson Land Use Planning Specialist Complete Wireless Consulting, Inc. 2009 V Street Sacramento, California 95818 (916) 709-2057 Operational Headquarters One Verizon Way Basking Ridge, New Jersey 07920 (908) 559-2001
Engineering /Architect:	Manuel S. Tsihlas MST Architects 1540 River Park Drive Sacramento, California 95815 (916) 567-9630
Property/Tower Owner:	Julie Overman AT&T Telephone: (770) 235-5879 Email: jo4976@att.com

Version Date: November 6, 2018

Aerial photograph showing the viewpoints for the photosimulations.

Downtown Middletown
21347 State Hwy 175
Middletown, CA 95461

verizon



Version Date: November 6, 2018

Photosimulation of the view looking west along Main Street at Calistoga Road.

Downtown Middletown
21347 State Hwy 175
Middletown, CA 95461

verizon

Version Date: November 6, 2018

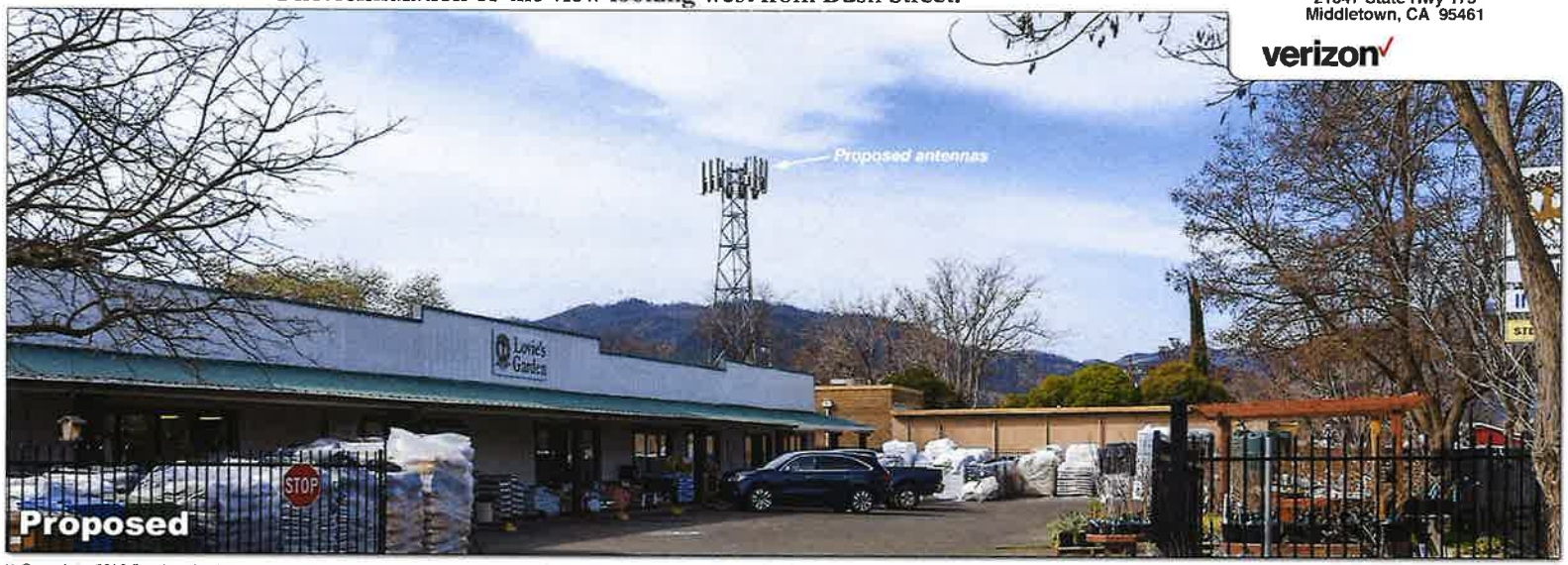
Photosimulation of the view looking northeast from Armstrong Street.

Version Date: November 6, 2018

Photosimulation of the view looking west from Bush Street.

Downtown Middletown
21347 State Hwy 175
Middletown, CA 95461

verizon



PROJECT SUPPORT STATEMENT – VARIANCE APPLICATION
VERIZON WIRELESS

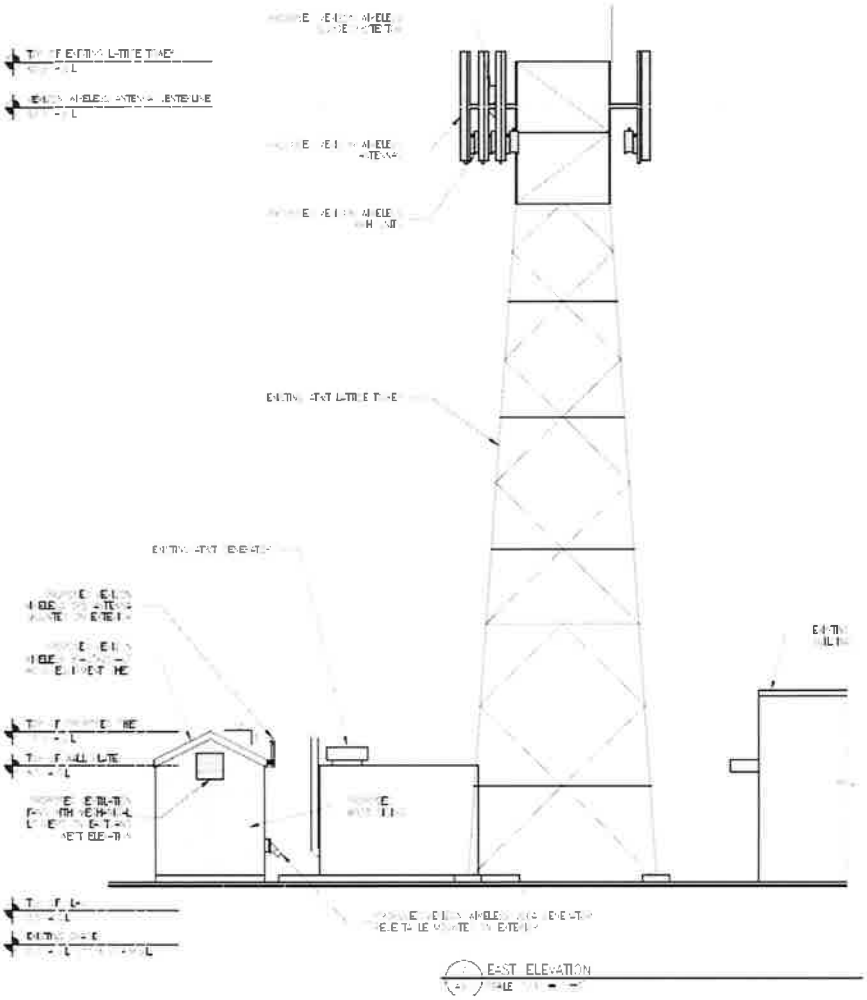
SITE NAME: **Downtown Middletown**
LOCATION: **21347 State Highway 175, Middletown, California 95461**
APN: **024-452-07**
PROJECT ID: **MUP18-46**

Proposed Project and Introduction

Verizon Wireless is seeking to improve communications service to residences, businesses, public services, and area travelers in Middletown and greater Lake County, California. Verizon maintains a strong customer base in Middletown and strives to improve coverage for both existing and potential customers. The proposed facility is needed to improve Verizon coverage near Main Street, Highway 175 and Highway 29 and surrounding area, by closing a significant gap in coverage and offloading existing facilities nearby. This project will expand Verizon's network and improve call quality, signal strength, and wireless connection services in Middletown. The improved wireless service will benefit residents, local businesses, tourist/commuters, and public safety communications systems in the County of Lake, including police, fire, and medical services.

Project Description

The proposed site design includes nine (9) antennas on three (3) sectors, mounted at a 57' centerline on an existing lattice tower sited on the parcel. The proposed ground equipment, including outdoor equipment cabinets, will be enclosed within an 8' x 20' wood equipment shed, within the existing footprint of the AT&T telephone switch station. Verizon will use the existing access route and entrance gate when accessing the facility. The project complies with FCC radio frequency emissions regulations as well as the County's development standards related to noise exposure.



Variance Request, Details, and Need

Variances – Chapter 52.3

1) that the granting of the variance will not be contrary to the intent of this Chapter or to the public safety, health and welfare, and

2) that due to special conditions or exceptional characteristics of the property, or its location, the strict application of this Chapter would result in practical difficulties and unnecessary hardships; and deprives such property of privileges enjoyed by other properties in the vicinity and identical zoning district.

Verizon Wireless proposes to co-locate antennas on an existing AT&T lattice tower located within an existing AT&T telephone switch communications building. Related ground equipment will be enclosed within an 8' x 20' wood equipment shed. The parcel is owned by Pacific Telephone and Telegraph Company (a subsidiary of AT&T). The existing telecommunications equipment switch station and lattice tower are legal non-conforming structures, and the lattice tower previously housed telecommunications equipment on the tower (microwave dish). The County of Lake "*Regulations for Placement of Communications Towers and Antenna*" (Chapter 21-71), requires **["co-location shall be pursued to the greatest extent possible"] (71.3(e)).** The proposed co-location does not require an increase in the height of the existing lattice tower or an expansion to the footprint of the existing communications station.

A Variance is requested with respect to the following:

71.8(a)(13) - Access shall be provided to the communications tower and communications equipment building by means of a public street or easement to a public street. The easement shall be a minimum of 20 feet in width and shall be improved to a width of at least 10 feet with a dust-free, all weather surface for its entire length.

- A 10' improved access to the project site. The 20' easement is not possible with the space between the parcel boundary and existing building. As such a variance is requested.

71.8(a)(17) - The foundation and base of any communications tower shall be setback from a property line (not lease line) located in any Residential District at least 100 feet and shall be set back from any other property line (not lease line) at least 50 feet.

- The tower located on the property is less than 50' from parcel boundaries. As such a variance is requested.

At the time the underlying Use Permit for the telephone switch station was approved, it was found that the proper vehicular egress to the site was adequate, as well as applicable setbacks. *Please refer to Use Permit 81-42.*

Findings Required for Variance

(a) That because of special circumstances applicable to subject property, including size, shape, topography, location or surroundings, the strict application of the development standards of this Chapter are found to deprive subject property of privileges enjoyed by other properties in the vicinity and under identical zone classification;

(b) That any variance granted is subject to such conditions as will assure that the adjustment thereby authorized shall not constitute a grant of special privilege inconsistent with the limitations upon other properties in the vicinity and district in which the subject property is situate; and

(c) That the granting of the variance is in accordance with the intent of this Chapter, is consistent with the General Plan and will not be detrimental to the public safety, health and welfare, or injurious to other properties in the vicinity.

Analysis

(a) That because of special circumstances applicable to subject property, including size, shape, topography, location or surroundings, the strict application of the development standards of this Chapter are found to deprive subject property of privileges enjoyed by other properties in the vicinity and under identical zone classification;
The strict or literal interpretation and enforcement of the specified regulation would result in practical difficulty or unnecessary physical hardship inconsistent with the objectives of the development regulations contained in County's Zoning Code, specifically Regulations related to Communications Towers and Antenna as outlined in Chapter 21-71 and the goal to co-locate on an existing structure to the maximum extent feasible. After an exhaustive search for suitable locations that would meet coverage objectives, the selected site was found to be the least intrusive and adequate to meet the significant gap in coverage. The prohibition of the placement of antenna on the existing tower at this site would create an unnecessary hardship and may result in the need to install new and/or additional facilities to meet coverage needs. The facility is necessary in order to provide adequate levels of service within the target area. The subject parcel is approximately 0.15 – acres and rectangular shaped with the North property line of the parcel abutting the public right-of-way Hwy 175. There are exceptional or extraordinary circumstances or conditions or characteristics applicable to the property involved, or to the intended use of the property, that do not apply generally to other properties in the vicinity and in the same zoning district. The parcel is presently owned by AT&T and used as an AT&T telephone switch station with a large portion of the telecommunications equipment building and lattice tower covering a large part of the usable portions of the parcel. The telecommunications equipment building, and tower were previously approved by Use Permit before the Lake County Planning Commission at public hearing. At the time of approval, the existing structures were found to meet and be consistent with zoning district standards. Therefore, due to the topography of the parcel (including size, shape, location, and surroundings) a variance is necessary to allow Applicant to co-locate on the existing tower and provide adequate service to its wireless network.

The strict or literal interpretation and enforcement of the specified regulation would deprive the Applicant of privileges enjoyed by similar properties in the same zoning district. Further, a new telecommunications tower would be required, thus significantly delaying the deployment of wireless services to the public and safety service personnel within the County. Additionally, the requested variance will allow for the substantial improvement of telecommunication services, including improved data, internet, and emergency call services.

The proposed site will serve as a backup to the existing landline service in the area and will provide improved mobile communications, which are essential to emergency response, community safety, commerce, and recreation.

The choice of a wireless telecommunications facility at this location was determined due to several factors, such as co-location opportunity, topography, zoning regulations, available utilities, access, and a willing landlord - taking into account the needs of Verizon's network and the community values as expressed in the County's Code and General Plan. **Goal PFS-7.1 of the General Plan states, "*The County shall work with telecommunication providers to ensure that all residents and businesses will have access to telecommunications services, including broadband internet service.*"**

The proposed facility will fill a gap in coverage in the County of Lake, Middletown area. Wireless communication is a line-of-sight technology that requires facilities to be near the wireless handsets in order to be served.

The proposed facility is intended to provide capacity relief, which is the need for more bandwidth of service. A telecommunications site can only handle a limited number of voice calls, data mega bites, or total number of active users. When any one of these limits are met, the user experience within the coverage area of an existing facility quickly degrades during the busier hours of use or during natural disasters.

(b) That any variance granted is subject to such conditions as will assure that the adjustment thereby authorized shall not constitute a grant of special privilege inconsistent with the limitations upon other properties in the vicinity and district in which the subject property is situate; and

The granting of the Variance will not constitute a grant of special privilege inconsistent with the limitations on other properties classified in the same zoning district. The granting of the Variance will provide adequate wireless coverage to Verizon customers near and within the surrounding area. Thus, with the Variance approval, it will not constitute a grant of special privilege.

The granting of the Variance will not be detrimental to the public health, safety or welfare, or be materially injurious to properties or improvements in the vicinity.

Biological Resources

The Project site is not identified as a potentially suitable habitat for any sensitive plant or animal species, in the General Plan or Zoning Map. No potentially adverse biological impacts are anticipated.

Public Health

Wireless telecommunication facilities are required to comply with Federal Communication Commission regulations related to Electromagnetic field (EMF) emissions These FCC regulations preclude local jurisdictions from considering potential health impacts of EMF emissions when reviewing telecommunications projects as part of the land use approval process for cell towers.

CEQA Compliance

Pursuant to Section 15303 of the Guidelines for implementation of the California Environmental Quality Act (CEQA), the proposed Project qualifies for a Class 3 Categorical Exemption as new construction of a small structure.

(c) That the granting of the variance is in accordance with the intent of this Chapter, is consistent with the General Plan and will not be detrimental to the public safety, health and welfare, or injurious to other properties in the vicinity.

The proposed use will not have a substantial adverse effect on abutting properties or the allowed use of the abutting properties. The proposed use and manner of development are consistent with the goals, policies, and standards of the County's General Plan. Specifically, the proposed project would meet consumer demand, enhance regional retail use, facilitate commercial development, and increase entertainment and tourism activities as outlined in the General Plan. The improvement in telecommunications infrastructure and access to communications technology reflects the goals enumerated in **Goal PRF-7** ***"To expand the use of information technology in order to increase the County's economic competitiveness, develop a more informed citizenry, and improve personal convenience for residents and businesses in the County"*** The proposed facility will provide reliable and effective wireless services that are commensurate with the siting of telecommunications infrastructure and human health and safety concerns.

Goal PRS-7.3, "Siting of Telecommunications Infrastructure

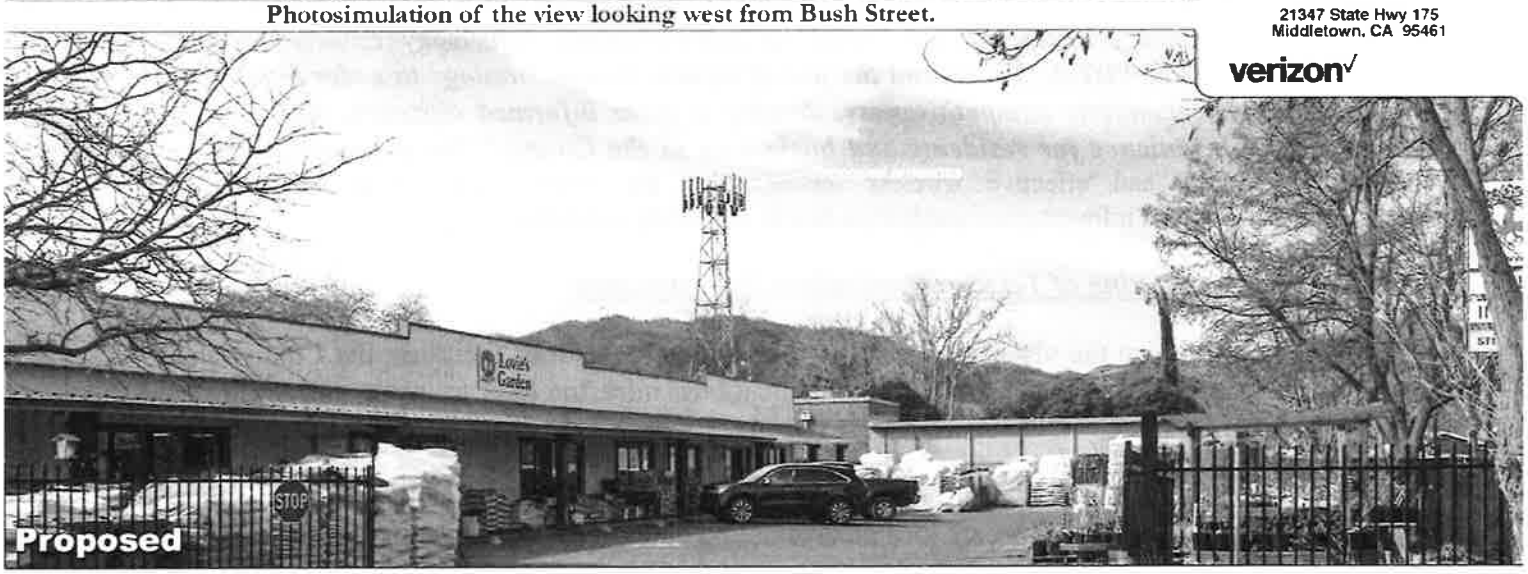
To minimize the visual impact of wireless communications facilities, the County shall encourage the siting of telecommunications infrastructure to meet the following conditions:

- Located away from residential and open space areas;
- When possible, are located on existing buildings, existing poles, or other existing support structures; and,
- Painted, camouflaged, textured, or otherwise designed to better integrate into existing conditions adjacent to the installation site.

The granting of the Variance will not be materially detrimental to other properties or land uses in the area and will not substantially interfere with the present or future ability to use the land as intended or outlined in the General Plan. There are exceptional or extraordinary circumstances or conditions or characteristics applicable to the subject property or to the intended use that do not apply to other properties in the same vicinity and land use zoning district. The strict application of the land use zoning district deprives the subject property of privileges enjoyed by other properties in the vicinity or in the same land use zoning district, and the granting of the Variance is compatible with the maps, objectives, policies, programs and general land uses specified in the County's Zoning Ordinance, Regulations for Communications Towers and Antennae, and General Plan.

Photo-simulations

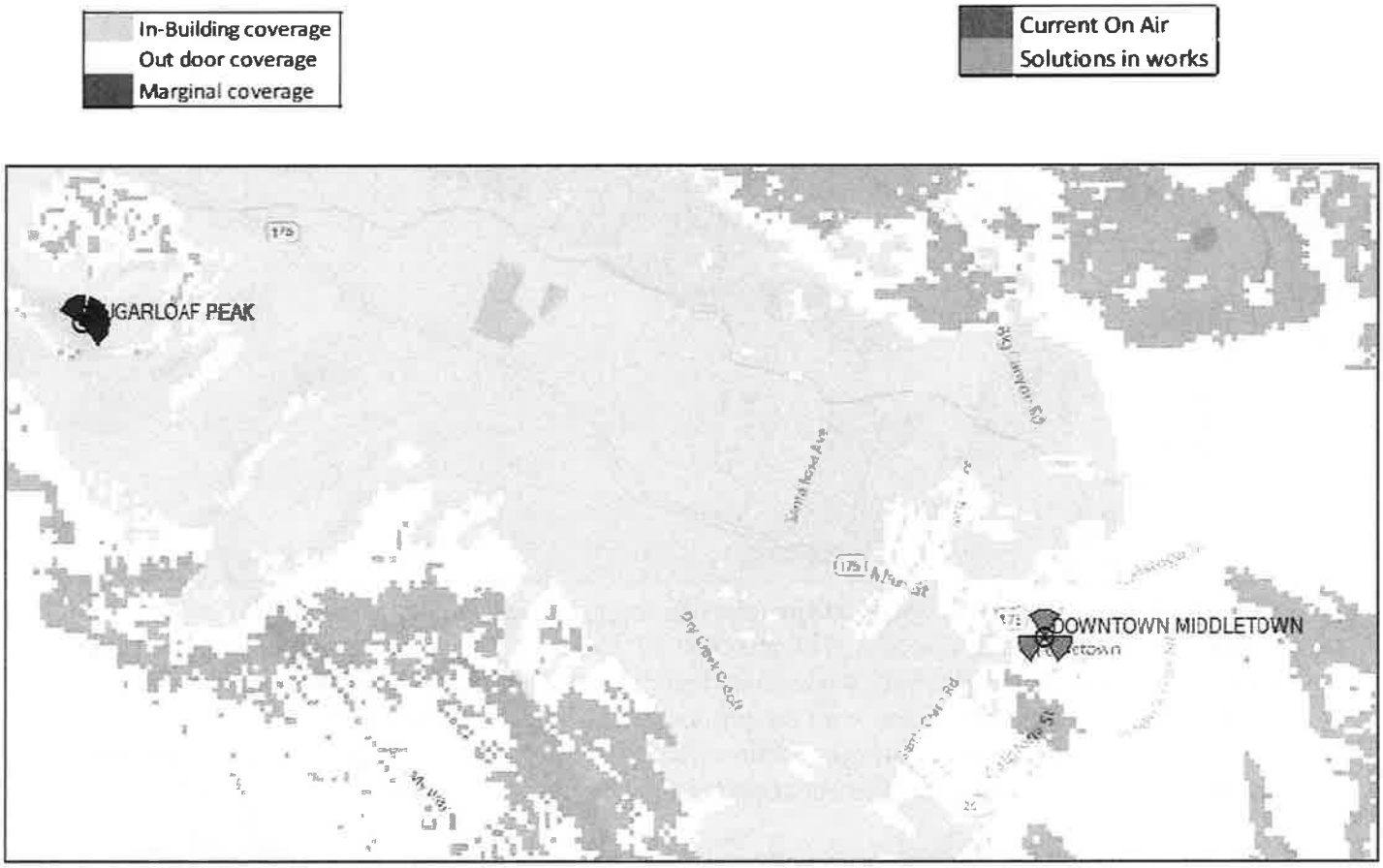
Photosimulation of the view looking west from Bush Street.



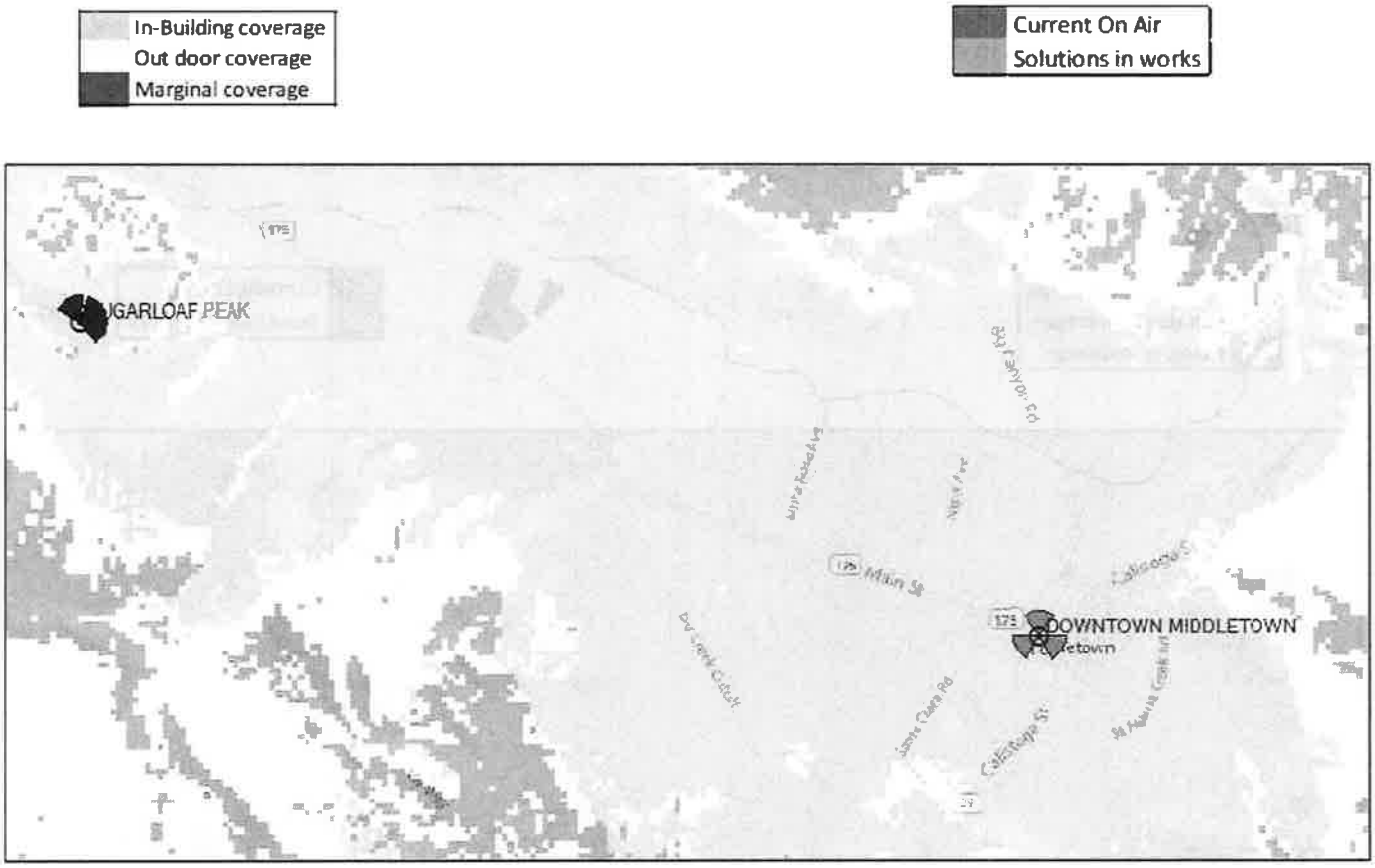
Coverage Maps

Coverage is best shown in coverage maps. When preparing coverage maps, Verizon uses tools that take into account topography, including terrain, vegetation, building types, and site specifics to model predictions of the existing coverage and what we expect to see with a proposed facility. It is important to point out that these coverage maps are different than the Search Ring.

Before:



After:



As can be seen in the **Coverage Maps** (above), the proposed facility is needed to minimize an existing coverage gap in this area. The attached RF Coverage Maps depict the existing coverage situation around the project site, with maps depicting 1) existing coverage without the proposed facility and 2) network coverage with the proposed facility, These Coverage Maps display a stark contrast in coverage, since existing conditions lack sufficient Verizon wireless coverage due to the inadequacy of the surrounding sites at covering the targeted service area.

Verizon's existing facilities cannot adequately serve its customers in the desired area of coverage, let alone address rapidly increasing data usage. The site will help to close the gap in coverage and help address rapidly increasing data usage driven by smart phone and tablet usage. Besides typical personal mobility use, customer also use the network for emergency and public safety services.

The maps also show predicted coverage based on signal strength in the vicinity of the site if antennas are placed as proposed in the Application. As show in the Maps, the proposed site closes the significant service coverage gap.

Service Objective

Statements Related to Need

Reliable and robust wireless networks are an increasing importance with the growth and use of cellular phones and data driven devices. Especially in an area, with a moderate mix of commercial, recreational, residential, employment, and transportation uses that rely on the newest and fastest communication methods.

Modern life has become increasingly dependent on instant communication. No longer just a personal and social convenience, wireless telecommunication devices such as mobile phones, smartphones and tablets have become an important tool for business, commerce and public safety. The proposed Verizon facility will provide service 24 hours a day, 7 days a week. This site will serve as a backup to the existing landline service in the area and will provide improved mobile communications, which are essential to emergency response, community safety, commerce, and recreation. The following wireless telecommunications users will benefit from improved coverage created as a result of the proposed facility:

- Commercial businesses and public and community services in the area
- Safety and Emergency Services
- Employees, Businesses, and visitors in the target area
- Residences

Coverage – Significant Gap

Coverage is the need for expanded wireless service in an area that has either no service or poor service. The request for improved service often comes from our customers emergency services personnel. While this once meant providing coverage in vehicles, as usage patterns have shifted this now means improving coverage inside of buildings and in residential areas as well.

The choice of a wireless telecommunications facility at this location was made due to a number of factors, taking into account the needs of Verizon's network and the community values as expressed in the County's Code. The proposed facility will fill a gap in coverage in the Middletown area, including coverage enhancement and capacity to support the local businesses and residences in the area.

Capacity – Significant Gap

Capacity is the need for more wireless resources. This could mean that customers cannot make/receive calls or could have trouble getting applications to run. A site short on capacity could also make internet connections time out, or delay information to emergency response personnel.

The objective of the proposed facility is to provide capacity relief to the existing overloaded facility ("Sugarloaf Peak"). This is the closest Verizon facility to the proposed location. The proposed facility is intended to provide capacity relief, which is the need for more bandwidth of service. A telecommunications site can only handle a limited number of voice calls, data mega bites, or total number of active users. When any one of these limits are met, the user experience within the coverage area of an existing facility quickly degrades during the busier hours of use.

In order to achieve this service objective, VZW identified a potential candidate "Search Ring". A Search Ring is a circle on a map that is determined by Verizon's Radio Frequency Engineer. The circle identifies the geographic area within which the proposed facility must be located to satisfy the intended service objective. In creating the Search Ring, the RF Engineer takes into account many factors, such as topography, proximity to existing structures, current coverage areas, existing obstructions, etc.

Notice of Actions Affecting Development Permit

In accordance with California Government Code Section 65945(a), Verizon Wireless requests notice of any proposal to adopt or amend the: general plan, specific plan, zoning ordinance, ordinance(s) affecting building or grading permits that would in any manner affect this development permit. Any such notice may be sent to Attn.: Gerie Johnson, Land Use Planning Specialist, Complete Wireless Consulting, Inc., 2009 V Street, Sacramento, California 95818.

Contact Information:

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Verizon Wireless:	c/o Complete Wireless Consulting, Inc. Attn: Gerie Johnson Land Use Planning Specialist Complete Wireless Consulting, Inc. 2009 V Street Sacramento, California 95818 (916) 709-2057 Operational Headquarters One Verizon Way Basking Ridge, New Jersey 07920 (908) 559-2001
Engineering /Architect:	Manuel S. Tsihlas MST Architects 1540 River Park Drive Sacramento, California 95815 (916) 567-9630
Property/Tower Owner:	Mark Gagne Crown Castle 4301 Hacienda Drive Suite 410 Pleasanton, California 94588 (916) 984-7272

Federal Communications Commission

Local and State Government Advisory Committee

A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance

June 2, 2000

A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance

Over the past two years, the Federal Communications Commission (FCC) and its Local and State Government Advisory Committee (LSGAC) have been working together to prepare a voluntary guide to assist state and local governments in devising efficient procedures for ensuring that the antenna facilities located in their communities comply with the FCC's limits for human exposure to radiofrequency (RF) electromagnetic fields. The attached guide is the product of this joint effort.

We encourage state and local government officials to consult this guide when addressing issues of facilities siting within their communities. This guide contains basic information, in a form accessible to officials and citizens alike, that will alleviate misunderstandings in the complex area of RF emissions safety. This guide is not intended to replace OET Bulletin 65, which contains detailed technical information regarding RF issues, and should continue to be used and consulted for complex sites. The guide contains information, tables, and a model checklist to assist state and local officials in identifying sites that do not raise concerns regarding compliance with the Commission's RF exposure limits. In many cases, the model checklist offers a quick and effective way for state and local officials to establish that particular RF facilities are unlikely to exceed specific federal guidelines that protect the public from the environmental effects of RF emissions. Thus, we believe this guide will facilitate federal, state, and local governments working together to protect the public while bringing advanced and innovative communications services to consumers as rapidly as possible. We hope and expect that use of this guide will benefit state and local governments, service providers, and, most importantly, the American public.

We wish all of you good luck in your facilities siting endeavors.

William E. Kennard, Chairman
Federal Communications Commission

Kenneth S. Fellman, Chair
Local and State Government
Advisory Committee

A LOCAL GOVERNMENT OFFICIAL'S GUIDE TO TRANSMITTING ANTENNA RF EMISSION SAFETY: RULES, PROCEDURES, AND PRACTICAL GUIDANCE

A common question raised in discussions about the siting of wireless telecommunications and broadcast antennas is, "Will this tower create any health concerns for our citizens?" We have designed this guide to provide you with information and guidance in devising efficient procedures for assuring that the antenna facilities located in your community comply with the Federal Communication Commission's (FCC's) limits for human exposure to radiofrequency (RF) electromagnetic fields.[1]

We have included a checklist and tables to help you quickly identify siting applications that do not raise RF exposure concerns. Appendix A to this guide contains a checklist that you may use to identify "categorically excluded" facilities that are unlikely to cause RF exposures in excess of the FCC's guidelines. Appendix B contains tables and figures that set forth, for some of the most common types of facilities, "worst case" distances beyond which there is no realistic possibility that exposure could exceed the FCC's guidelines.

As discussed below, FCC rules require transmitting facilities to comply with RF exposure guidelines. The limits established in the guidelines are designed to protect the public health with a very large margin of safety. These limits have been endorsed by federal health and safety agencies such as the Environmental Protection Agency and the Food and Drug Administration. The FCC's rules have been upheld by a Federal Court of Appeals.[2] As discussed below, most facilities create maximum exposures that are only a small fraction of the limits. Moreover, the limits themselves are many times below levels that are generally accepted as having the potential to cause adverse health effects. Nonetheless, it is recognized that any instance of noncompliance with the guidelines is potentially very serious, and the FCC has therefore implemented procedures to enforce compliance with its rules. At the same time, state and local governments may wish to verify compliance with the FCC's exposure limits in order to protect their own citizens. As a state or local government official, you can play an important role in ensuring that innovative and beneficial communications services are provided in a manner that is consistent with public health and safety.

This document addresses only the issue of compliance with RF exposure limits established by the FCC. It does not address other issues such as construction, siting, permits, inspection, zoning, environmental review, and placement of antenna facilities within communities. Such issues fall generally under the jurisdiction of states and local governments, within the limits imposed for personal wireless service facilities by Section 332(c)(7) of the Communications Act.[3]

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[1] This guide is intended to complement, but not to replace, the FCC's OET Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," August 1997. Bulletin 65 can be obtained from the FCC's Office of Engineering and Technology (phone: 202-418-2464 or e-mail: rfsafety@fcc.gov). Bulletin 65 can also be accessed and downloaded from the FCC's "RF Safety" website: http://www.fcc.gov/oet/rfsafety.

[2] See *Cellular Phone Taskforce v. FCC*, 205 F.3d 82 (2d Cir. 2000).

This document is not intended to provide legal guidance regarding the scope of state or local government authority under Section 332(c)(7) or any other provision of law. Section 332(c)(7)[4] generally preserves state and local authority over decisions regarding the placement, construction, and modification of personal wireless service facilities,[5] subject to specific limitations set forth in Section 332(c)(7). Among other things, Section 332(c)(7) provides that "[n]o State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [FCC's] regulations concerning such emissions." The full text of Section 332(c)(7) is set forth in Appendix C.

State and local governments and the FCC may differ regarding the extent of state and local legal authority under Section 332(c)(7) and other provisions of law. To the extent questions arise regarding such authority, they are being addressed by the courts. Rather than address these legal questions, this document recognizes that, as a practical matter, state and local governments have a role to play in ensuring compliance with the 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, as a local official concerned about transmitting antenna emissions, 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.

First, we'll start with a summary of the FCC's RF exposure guidelines and some background information that you'll find helpful. Next, we'll review the FCC's procedures for verifying compliance with the guidelines and enforcing its rules. Finally, we'll offer you some practical guidance to help you determine if personal wireless service facilities may raise compliance concerns. Note, however, that this guide is only intended to help you distinguish sites that are unlikely to raise compliance concerns from those that may raise compliance concerns, not to identify sites that are out of compliance. Detailed technical information necessary to determine compliance for individual sites is contained in the FCC's OET Bulletin 65 (see footnote 1, above).

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[3] 47 U.S.C. § 332(c)(7). Under limited circumstances, the FCC also plays a role in the siting of wireless facilities. Specifically, the FCC reviews applications for facilities that fall within certain environmental categories under the National Environmental Policy Act of 1969 (NEPA), *see* 47 C.F.R. § 1.1307(a). Antenna structures that are over 200 feet in height or located near airport runways must be marked or lighted as specified by the Federal Aviation Administration and must be registered with the FCC, *see* 47 C.F.R. Part 17.

[4] Section 332(c)(7) of the Communications Act is identical to Section 704(a) of the Telecommunications Act of 1996.

[5] "Personal wireless services" generally includes wireless telecommunications services that are interconnected with the public telephone network and are offered commercially to the public. Examples include cellular and similar services (such as Personal Communications Service or "PCS"), paging and similar services, certain dispatch services, and services that use wireless technology to provide telephone service to a fixed location such as a home or office.

Before we start, however, let's take a short tour of the radiofrequency spectrum. RF signals may be transmitted over a wide range of frequencies. The frequency of an RF signal is expressed in terms of cycles per second or "Hertz," abbreviated "Hz." One kilohertz (kHz) equals one thousand Hz, one megahertz (MHz) equals one million Hz, and one gigahertz (GHz) equals one billion Hz. In the figure below, you'll see that AM radio signals are at the lower end of the RF spectrum, while other radio services, such as analog and digital TV (DTV), cellular and PCS telephony, and point-to-point microwave services are much higher in frequency.

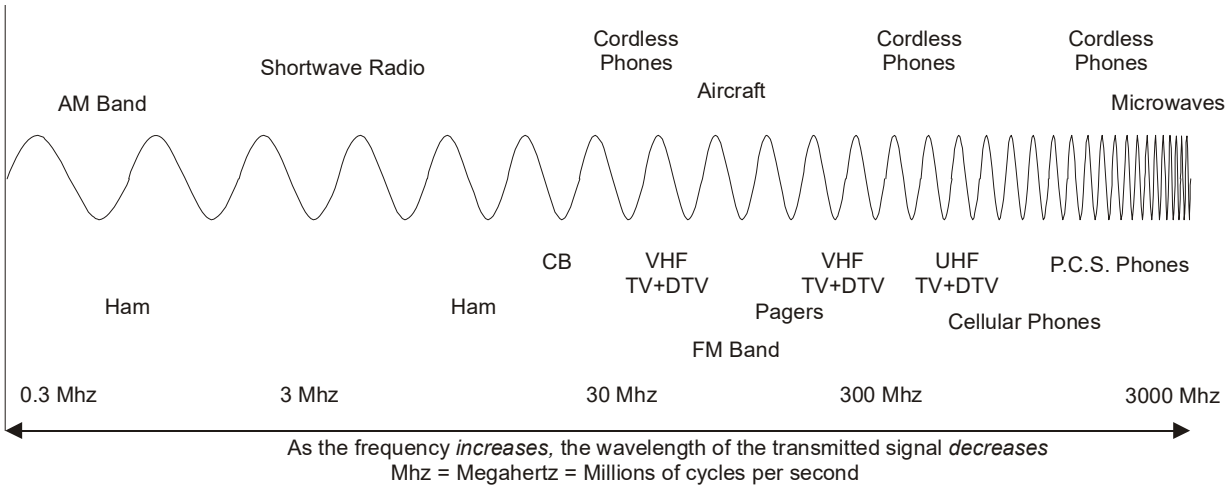


Illustration 1

The FCC's limits for maximum permissible exposure (MPE) to RF emissions depend on the frequency or frequencies that a person is exposed to. Different frequencies may have different MPE levels. Later in this document we'll show you how this relationship of frequency to MPE limit works.

I. The FCC's RF Exposure Guidelines and Rules.

Part 1 of the FCC's Rules and Regulations contains provisions implementing the National Environmental Policy Act of 1969 (NEPA). NEPA requires all federal agencies to evaluate the potential environmental significance of an agency action. Exposure to RF energy has been identified by the FCC as a potential environmental factor that must be considered before a facility, operation or transmitter can be authorized or licensed. The FCC's requirements dealing with RF exposure can be found in Part 1 of its rules at 47 C.F.R. § 1.1307(b). The exposure limits themselves are specified in 47 C.F.R. § 1.1310 in terms of frequency, field strength, power density and averaging time. Facilities and transmitters licensed and authorized by the FCC must either comply with these guidelines or else an applicant must file an Environmental Assessment (EA) with the FCC as specified in 47 C.F.R. § 1.1301 *et seq.* An EA is an official document required by the FCC's rules whenever an action may have a significant environmental impact (see discussion below). In practice, however, a potential environmental RF exposure problem is typically resolved before an EA would become necessary. Therefore, compliance with the FCC's RF guidelines constitutes a *de facto* threshold for obtaining FCC approval to construct or operate a station or transmitter. The FCC guidelines are based on exposure criteria

recommended in 1986 by the National Council on Radiation Protection and Measurements (NCRP) and on the 1991 standard developed by the Institute of Electrical and Electronics Engineers (IEEE) and later adopted as a standard by the American National Standards Institute (ANSI/IEEE C95.1-1992).

The FCC's guidelines establish separate MPE limits for "general population/uncontrolled exposure" and for "occupational/controlled exposure." The general population/uncontrolled limits set the maximum exposure to which most people may be subjected. People in this group include the general public not associated with the installation and maintenance of the transmitting equipment. Higher exposure limits are permitted under the "occupational/controlled exposure" category, but only for persons who are exposed as a consequence of their employment (*e.g.*, wireless radio engineers, technicians). To qualify for the occupational/controlled exposure category, exposed persons must be made fully aware of the potential for exposure (*e.g.*, through training), and they must be able to exercise control over their exposure. In addition, people passing through a location, who are made aware of the potential for exposure, may be exposed under the occupational/controlled criteria. The MPE limits adopted by the FCC for occupational/controlled and general population/uncontrolled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

Determining whether a potential health hazard could exist with respect to a given transmitting antenna is not always a simple matter. Several important factors must be considered in making that determination. They include the following: (1) What is the frequency of the RF signal being transmitted? (2) What is the operating power of the transmitting station and what is the actual power radiated from the antenna? [6] (3) How long will someone be exposed to the RF signal at a given distance from the antenna? (4) What other antennas are located in the area, and what is the exposure from those antennas? We'll explore each of these issues in greater detail below.

For all frequency ranges at which FCC licensees operate, Section 1.1310 of the FCC's rules establishes maximum permissible exposure (MPE) limits to which people may be exposed. The MPE limits vary by frequency because of the different absorptive properties of the human body at different frequencies when exposed to whole-body RF fields. Section 1.1310 establishes MPE limits in terms of "electric field strength," "magnetic field strength," and "far-field equivalent power density" (power density). For most frequencies used by the wireless services, the most relevant measurement is power density. The MPE limits for power density are given in terms of "milliwatts per square centimeter" or mW/cm^2. One milliwatt equals one thousandth of one watt (1/1000 of a watt).[7] In terms of power density, for a given frequency the FCC MPE limits can be interpreted as specifying the maximum rate that energy can be transferred (*i.e.*, the power) to a square centimeter of a person's body over a period of time (either 6 or 30 minutes, as explained

[6] Power travels from a transmitter through cable or other connecting device to the radiating antenna. "Operating power of the transmitting station" refers to the power that is fed from the transmitter (transmitter output power) into the cable or connecting device. "Actual power radiated from the antenna" is the transmitter output power minus the power lost (power losses) in the connecting device plus an apparent increase in power (if any) due to the design of the antenna. Radiated power is often specified in terms of "effective radiated power" or "ERP" or "effective isotropic radiated power" or "EIRP" (see footnote 14).

[7] Thus, by way of illustration, it takes 100,000 milliwatts of power to fully illuminate a 100 watt light bulb.

below). In practice, however, since it is unrealistic to measure separately the exposure of each square centimeter of the body, actual compliance with the FCC limits on RF emissions should be determined by "spatially averaging" a person's exposure over the projected area of an adult human body (this concept is discussed in the FCC's OET Bulletin 65).

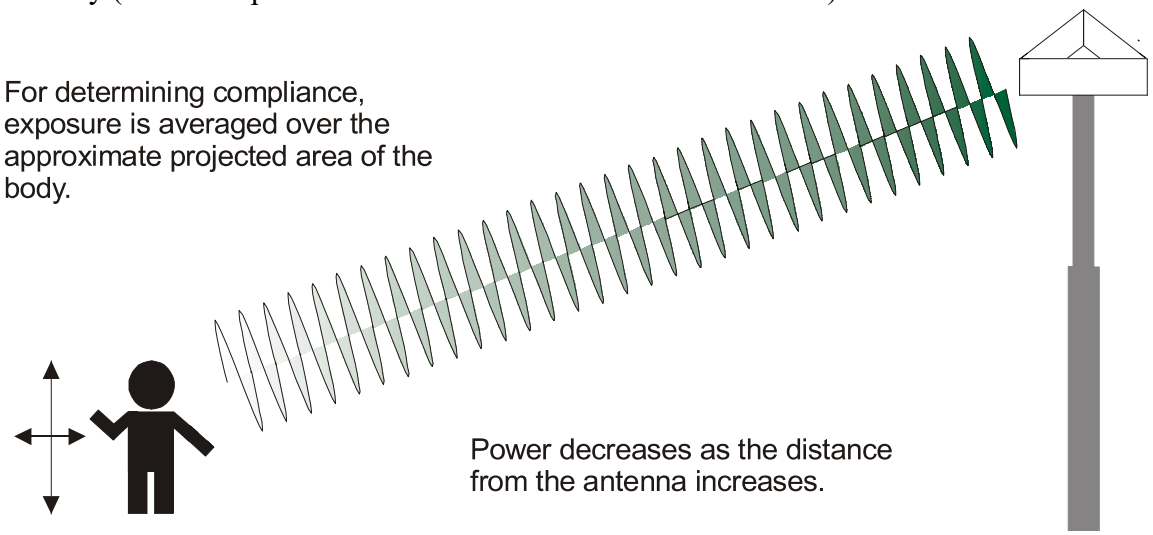


Illustration 2

Electric field strength and magnetic field strength are used to measure "near field" exposure. At frequencies below 300 MHz, these are typically the more relevant measures of exposure, and power density values are given primarily for reference purposes. However, evaluation of far-field equivalent power density exposure may still be appropriate for evaluating exposure in some such cases. For frequencies above 300 MHz, only one field component need be evaluated, and exposure is usually more easily characterized in terms of power density. Transmitters and antennas that operate at 300 MHz or lower include radio broadcast stations, some television broadcast stations, and certain personal wireless service facilities (*e.g.*, some paging stations). Most personal wireless services, including all cellular and PCS, as well as some television broadcast stations, operate at frequencies above 300 MHz. (See Illustration 1.)

As noted above, the MPE limits are specified as time-averaged exposure limits. This means that exposure can be averaged over the identified time interval (30 minutes for general population/uncontrolled exposure or 6 minutes for occupational/controlled exposure). However, for the case of exposure of the general public, time averaging is usually not applied because of uncertainties over exact exposure conditions and difficulty in controlling time of exposure. Therefore, the typical conservative approach is to assume that any RF exposure to the general public will be continuous. The FCC's limits for exposure at different frequencies are shown in Illustration 3, below:

Illustration 3. ***FCC Limits for Maximum Permissible Exposure (MPE)***

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	$(900/f^2)$*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	$(180/f^2)$*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Finally, it is important to understand that the FCC's limits apply cumulatively to all sources of RF emissions affecting a given area. A common example is where two or more wireless operators have agreed to share the cost of building and maintaining a tower, and to place their antennas on that joint structure. In such a case, the total exposure from the two facilities taken together must be within the FCC guidelines, or else an EA will be required.

A. Categorically Excluded Facilities

The Commission has determined through calculations and technical analysis that due to their low power or height above ground level, many facilities by their very nature are highly unlikely to

cause human exposures in excess of the guideline limits, and operators of those facilities are exempt from routinely having to determine compliance. Facilities with these characteristics are considered "categorically excluded" from the requirement for routine environmental processing for RF exposure.

Section 1.1307(b)(1) of the Commission's rules sets forth which facilities are categorically excluded.[8] If a facility is categorically excluded, an applicant or licensee may ordinarily assume compliance with the guideline limits for exposure. However, an applicant or licensee must evaluate and determine compliance for a facility that is otherwise categorically excluded if specifically requested to do so by the FCC.[9] If potential environmental significance is found as a result, an EA must be filed with the FCC.

No radio or television broadcast facilities are categorically excluded. Thus, broadcast applicants and licensees must affirmatively determine their facility's compliance with the guidelines before construction, and upon every facility modification or license renewal application. With respect to personal wireless services, a cellular facility is categorically excluded if the total effective radiated power (ERP) of all channels operated by the licensee at a site is 1000 watts or less. If the facility uses sectorized antennas, only the total effective radiated power in each direction is considered. Examples of a 3 sector and a single sector antenna array are shown below:

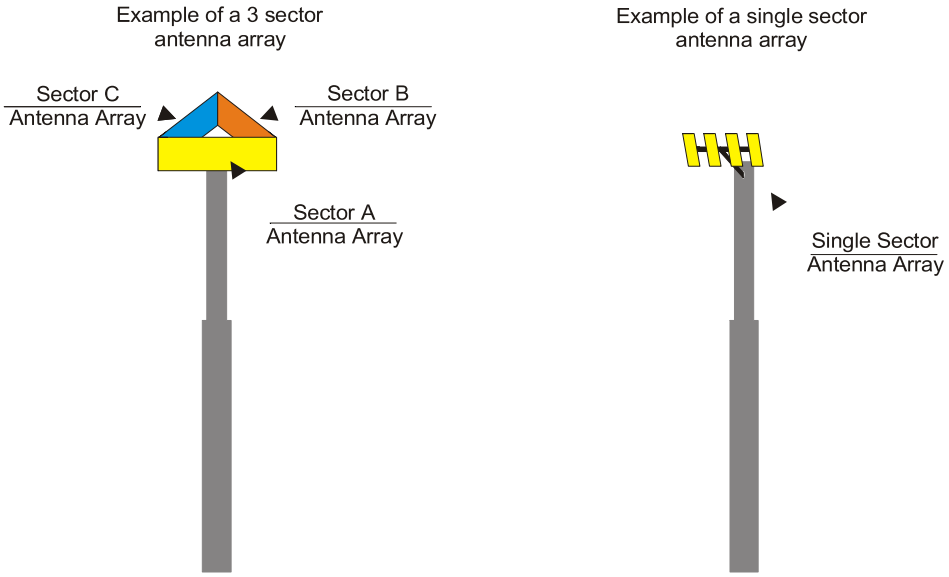


Illustration 4

[8] "The appropriate exposure limits . . . are generally applicable to all facilities, operations and transmitters regulated by the Commission. However, a determination of compliance with the exposure limits . . . (routine environmental evaluation), and preparation of an EA if the limits are exceeded, is necessary only for facilities, operations and transmitters that fall into the categories listed in table 1 [of §1.1307], or those specified in paragraph (b)(2) of this section. All other facilities, operations and transmitters are categorically excluded from making studies or preparing an EA . . ."

[9] See 47 C.F.R §1.1307(c) and (d).

In addition, a cellular facility is categorically excluded, regardless of its power, if it is not mounted on a building and the lowest point of the antenna is at least 10 meters (about 33 feet) above ground level. A broadband PCS antenna array is categorically excluded if the total effective radiated power of all channels operated by the licensee at a site (or all channels in any one direction, in the case of sectorized antennas) is 2000 watts or less. Like cellular, another way for a broadband PCS facility to be categorically excluded is if it is not mounted on a building and the lowest point of the antenna is at least 10 meters (about 33 feet) above ground level. The power threshold for categorical exclusion is higher for broadband PCS than for cellular because broadband PCS operates at a higher frequency where exposure limits are less restrictive. For categorical exclusion thresholds for other personal wireless services, consult Table 1 of Section 1.1307(b)(1).[10]

For your convenience, we have developed the checklist in Appendix A that may be used to streamline the process of determining whether a proposed facility is categorically excluded. You are encouraged to adopt the use of this checklist in your jurisdiction, although such use is not mandatory.

B. What If An Applicant Or Licensee Wants To Exceed The Limits Shown In Illustration 3?

Any FCC applicant or licensee who wishes to construct or operate a facility that, by itself or in combination with other sources of emissions (*i.e.*, other transmitting antennas), may cause human exposures in excess of the guideline limits must file an Environmental Assessment (EA) with the FCC. Where more than one antenna is collocated (for example, on a single tower or rooftop or at a hilltop site), the applicant must take into consideration all of the RF power transmitted by all of the antennas when determining maximum exposure levels. Compliance at an existing site is the shared responsibility of all licensees whose transmitters produce exposure levels in excess of 5% of the applicable exposure limit. A new applicant is responsible for compliance (or submitting an EA) at a multiple-use site if the proposed transmitter would cause non-compliance and if it would produce exposure levels in excess of 5% of the applicable limit.[11]

An applicant or licensee is not permitted to construct or operate a facility that would result in exposure in excess of the guideline limits until the FCC has reviewed the EA and either found no significant environmental impact, or pursued further environmental processing including the preparation of a formal Environmental Impact Statement. As a practical matter, however, this process is almost never invoked for RF exposure issues because applicants and licensees normally undertake corrective actions to ensure compliance with the guidelines before submitting an application to the FCC.

Unless a facility is categorically excluded (explained above), the FCC's rules require a licensee to evaluate a proposed or existing facility's compliance with the RF exposure guidelines and to

[10] Table 1 of §1.1307(b)(1) is reproduced in Appendix A to this guide.

[11] For more information, see OET Bulletin 65, or see 47 CFR §1.1307(b)(3).

determine whether an EA is required. In the case of broadcast licensees, who are required to obtain a construction permit from the FCC, this evaluation is required before the application for a construction permit is filed, or the facility is constructed. In addition, if a facility requires the filing of an EA for any reason other than RF emissions, the RF evaluation must be performed before the EA is filed. Factors other than RF emissions that may require the filing of an EA are set out in 47 C.F.R. § 1.1307(a). Otherwise, new facilities that do not require FCC-issued construction permits should be evaluated before they are placed in operation. The FCC also requires its licensees to evaluate existing facilities and operations that are not categorically excluded if the licensee seeks to modify its facilities or renew its license. These requirements are intended to enhance public safety by requiring periodic site compliance reviews.

All facilities that were placed in service before October 15, 1997 (when the current RF exposure guidelines became effective) are expected to comply with the current guidelines no later than September 1, 2000, or the date of a license renewal, whichever is earlier.[12] If a facility cannot meet the September 1, 2000, date, the licensee of that facility must file an EA by that date. Section 1.1307(b) of the FCC's rules requires the licensee to provide the FCC with technical information showing the basis for its determination of compliance upon request.

II. How the FCC Verifies Compliance with and Enforces Its Rules.

A. Procedures Upon Initial Construction, Modification, and Renewal.

The FCC's procedures for verifying that a new facility, or a facility that is the subject of a facility modification or license renewal application, will comply with the RF exposure rules vary depending upon the service involved. Applications for broadcast services (for example, AM and FM stations, and television stations) are reviewed by the FCC's Mass Media Bureau (MMB). As part of every relevant application, the MMB requires an applicant to submit an explanation of what steps will be taken to limit RF exposure and comply with FCC guidelines. The applicant must certify that RF exposure procedures will be coordinated with all collocated entities (usually other stations at a common transmitter site or hill or mountain peak). If the submitted explanation does not adequately demonstrate a facility's compliance with the guidelines, the MMB will require additional supporting data before granting the application.

The Wireless Telecommunications Bureau (WTB) reviews personal wireless service applications (for cellular, PCS, SMR, etc.). For those services that operate under blanket area licenses, including cellular and PCS, the license application and renewal form require the applicant to certify whether grant of the application would have a significant environmental impact so as to require submission of an EA. The applicant's answer to this question covers all of the facilities sites included within the area of the license.

For those services that continue to be licensed by site (*e.g.*, certain paging renewals), the WTB requires a similar certification on the application form for each site. To comply with the FCC's rules, an applicant must determine its own compliance before completing this certification for

[12] Prior to October 15, 1997, the Commission applied a different set of substantive guidelines.

every site that is not categorically excluded. The WTB does not, however, routinely require the submission of any information supporting the determination of compliance.

B. Procedures For Responding To Complaints About Existing Facilities.

The FCC frequently receives inquiries from members of the public as to whether a particular site complies with the RF exposure guidelines. Upon receiving these inquiries, FCC staff may ask the inquiring party to describe the site at issue. In many instances, the information provided by the inquiring party does not raise any concern that the site could exceed the limits in the guidelines. FCC staff will then inform the inquiring party of this determination.

In some cases, the information provided by the inquiring party does not preclude the possibility that the limits could be exceeded. Under these circumstances, FCC staff may ask the licensee who operates the facility to supply information demonstrating its compliance. FCC staff may also inspect the site to determine whether it is accessible to the public, and examine other relevant physical attributes. Usually, the information obtained in this manner is sufficient to establish compliance. If compliance is established in this way, FCC staff will inform the inquiring party of this determination.

In some instances, a licensee may be unable to provide information sufficient to establish compliance with the guideline limits. In these cases, FCC staff may test the output levels of individual facilities and evaluate the physical installation. Keep in mind, however, that instances in which physical testing is necessary to verify compliance are relatively rare.

If a site is found to be out of compliance with the RF guidelines, the FCC will require the licensees at the site to remedy the situation. Depending on the service and the nature and extent of the violation, these remedies can include, for example, an immediate reduction in power, a modification of safety barriers, or a modification of the equipment or its installation. Actions necessary to bring a site into compliance are the shared responsibility of all licensees whose facilities cause exposures in that area that exceed 5% of the applicable MPE limit. In addition, licensees may be subject to sanctions for violating the FCC's rules and/or for misrepresentation.

The FCC is committed to responding fully, promptly, and accurately to all inquiries regarding compliance with the RF exposure guidelines, and to taking swift and appropriate action whenever the evidence suggests potential noncompliance. To perform this function effectively, however, the FCC needs accurate information about potentially problematic situations. By applying the principles discussed in this guide about RF emissions, exposure and the FCC's guidelines, state and local officials can fulfill a vital role in identifying and winnowing out situations that merit further attention.

III. Practical Guidance Regarding Compliance.

This section is intended to provide some general guidelines that can be used to identify sites that should not raise serious questions about compliance with FCC RF exposure guidelines. Sites that don't fall into the categories described here may still meet the guidelines, but the determination

of compliance will not be as straightforward. In such cases, a detailed review may be required. The tables and graphs shown in Appendix B are intended only to assist in distinguishing sites that should not raise serious issues from sites that may require further inquiry. They are not intended for use in identifying sites that are out of compliance. As noted above, the factors that can affect exposure at any individual site, particularly a site containing multiple facilities, are too numerous and subtle to be practically encompassed within this framework.

Applying the basic principles discussed in this guide should allow you to eliminate a large number of sites from further consideration with respect to health concerns. You may find it useful to contact a qualified radio engineer to assist you in your inquiry. Many larger cities and counties, and most states, have radio engineers on staff or under contract. In smaller jurisdictions, we recommend you seek initial assistance from other jurisdictions, universities that have RF engineering programs, or perhaps the engineer in charge of your local broadcast station(s).

We'll exclude any discussion of broadcast sites. As explained before, broadcast licensees are required to submit site-specific information on each facility to the FCC for review, and that information is publicly available at the station as long as the application is pending. The focus in this section is on personal wireless services, particularly cellular and broadband PCS, the services that currently require the largest numbers of new and modified facilities. Many other personal wireless services, however, such as paging services, operate in approximately the same frequency ranges as cellular and broadband PCS. [13] Much of the information here is broadly applicable to those services as well, and specific information is provided in Appendix B for paging and narrowband PCS operations over frequency bands between 901 and 940 MHz.

Finally, this section only addresses the general population/uncontrolled exposure guidelines, since compliance with these guidelines generally causes the most concern to state and local governments. Compliance with occupational/controlled exposure limits should be examined independently.

A. Categorically Excluded Facilities.

As a first step in evaluating a siting application for compliance with the FCC's guidelines, you will probably want to consider whether the facility is categorically excluded under the FCC's rules from routine evaluation for compliance. The checklist in Appendix A will guide you in making this determination. Because categorically excluded facilities are unlikely to cause any exposure in excess of the FCC's guidelines, determination that a facility is categorically excluded should generally suffice to end the inquiry.

B. Single Facility Sites.

If a wireless telecommunications facility is not categorically excluded, you may want to evaluate potential exposure using the methods discussed below and the tables and figures in Appendix B.

[13] The major exception is fixed wireless services, which often operate at much higher frequencies. In addition, some paging and other licensees operate at lower frequencies

If you "run the numbers" using the conservative approaches promoted in this paper and the site in question does not exceed these values, then you generally need look no further. Alternately, if the "numbers" don't pass muster, you may have a genuine concern. But remember, there may be other factors (*i.e.*, power level, height, blockages, etc.) that contribute to whether the site complies with FCC guidelines.

Where a site contains only one antenna array, the maximum exposure at any point in the horizontal plane can be predicted by calculations. The tables and graphs in Appendix B show the maximum distances in the horizontal plane from an antenna at which a person could possibly be exposed in excess of the guidelines at various levels of effective radiated power (ERP).[14] Thus, if people are not able to come closer to an antenna than the applicable distance shown in Appendix B, there should be no cause for concern about exposure exceeding the FCC guidelines. The tables and graphs apply to the following wireless antennas: (1) cellular omni-directional antennas (Table B1-1 and Figure B1-1); (2) cellular sectorized antennas (Table B1-2 and Figure B1-2); (3) broadband PCS sectorized antennas (Table B1-3 and Figure B1-3);[15] and (4) high-power (900 MHz-band) paging antennas (Table B1-4 and Figure B1-4). Table B1-4 and Figure B1-4 can also be used for omni-directional, narrowband (900 MHz) PCS antennas. Note that both tables and figures in Appendix B have been provided. In some cases it may be easier to use a table to estimate exposure distances, but figures may also be used when a more precise value is needed that may not be listed in a table.

It's important to note that the predicted distances set forth in Appendix B are based on a very conservative, "worst case" scenario. In other words, Appendix B identifies the furthest distance from the antenna that presents even a remote realistic possibility of RF exposure that could exceed the FCC guidelines. The power levels are based on the approximate maximum number of channels that an operator is likely to operate at one site. It is further assumed that each channel operates with the maximum power permitted under the FCC's rules and that all of these channels are "on" simultaneously, an unlikely scenario. This is a very conservative assumption. In reality, most sites operate at a fraction of the maximum permissible power and many sites use fewer than the maximum number of channels. Therefore, actual exposure levels would be expected to be well below the predicted values. Another mitigating factor could be the presence of intervening structures, such as walls, that will reduce RF exposure by variable amounts. For all these reasons, the values given in these tables and graphs are considered to be quite conservative and should over-predict actual exposure levels.

[14] ERP is the apparent effective amount of power leaving the transmit antenna. The ERP is determined by factors including but not limited to transmitter output power, coaxial line loss between the transmitter and the antenna, and the "gain" (focusing effect) of the antenna. In some cases, power may also be expressed in terms of EIRP (effective isotropically radiated power). Therefore, for convenience, the tables in Appendix B also include a column for EIRP. ERP and EIRP are related by the mathematical expression: (1.64) X ERP = EIRP.

[15] Because broadband PCS antennas are virtually always sectorized, no information is provided for omni-directional PCS antennas.

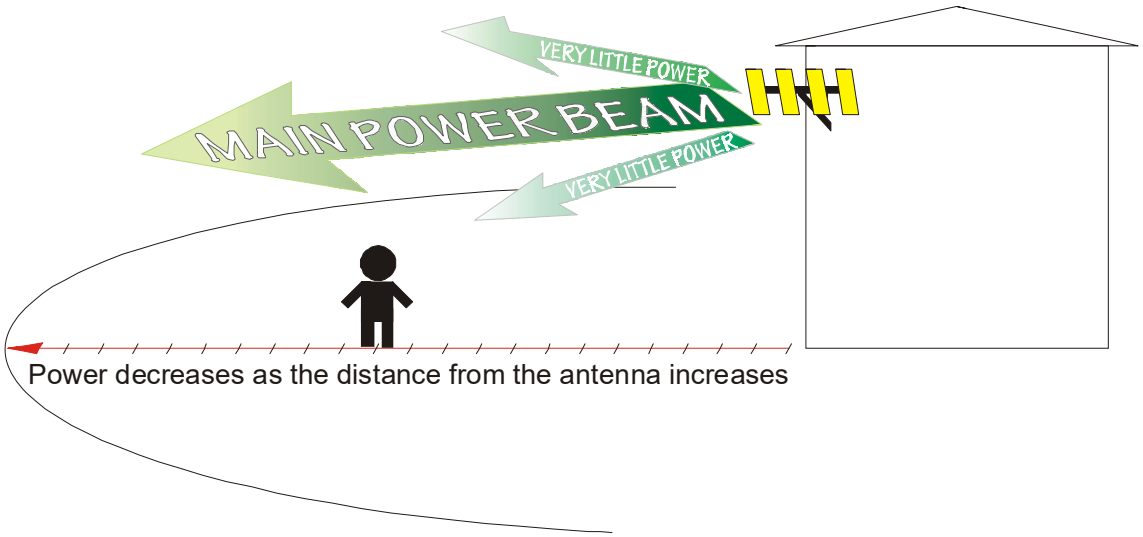


Illustration 5

Personal wireless service antennas typically do not emit high levels of RF energy directed above or below the horizontal plane of the antenna. Although the precise amount of energy transmitted outside the horizontal plane will depend upon the type of antenna used, we are aware of no wireless antennas that produce significant non-horizontal transmissions. Thus, exposures even a small distance below the horizontal plane of these antennas would be significantly less than in the horizontal plane. As discussed above, the tables and figures in Appendix B show distances in the horizontal plane from typical antennas at which exposures could potentially exceed the guidelines, assuming "worst case" operating conditions at maximum possible power levels. In any direction other than horizontal, including diagonal or straight down, these "worst case" distances would be significantly less.

Where unidirectional antennas are used, exposure levels within or outside the horizontal plane in directions other than those where the antennas are aimed will typically be insignificant. In addition, many new antennas are being designed with shielding capabilities to minimize emissions in undesired directions.

C. Multiple Facility Sites.

Where multiple facilities are located at a single site, the FCC's rules require the total exposure from all facilities to fall within the guideline limits, unless an EA is filed and approved. In such cases, however, calculations of predicted exposure levels and overall evaluation of the site may become much more complicated. For example, different transmitters at a site may operate different numbers of channels, or the operating power per channel may vary from transmitter to transmitter. Transmitters may also operate on different frequencies (for example, one antenna array may belong to a PCS operator, while the other belongs to a cellular operator). A large number of variables such as these make the calculations more time consuming, and make it difficult to apply a simple rule-of-thumb test. See the following illustration.

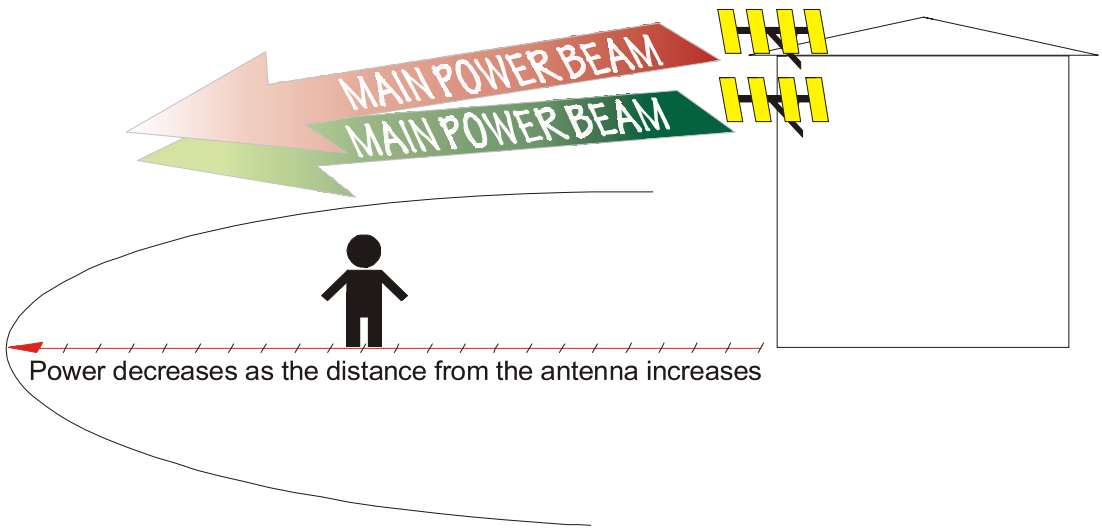


Illustration 6

However, we can be overly conservative and estimate a "worst case" exposure distance for compliance by assuming that the total power (e.g., ERP) of all transmitting antennas at the site is concentrated in the antenna that is closest to the area in question. (In the illustration above, this would be the antenna that is mounted lower on the building.) Then the values in the tables and graphs in Appendix B may be used as if this were the only antenna at the site, with radiated power equal to the sum of the actual radiated power of all antennas at the site. Actual RF exposure at any point will always be less than the exposure calculated using these assumptions. Thus, if people are not able to come closer to a group of antennas than the applicable distance shown in Appendix B using these assumptions, there should be no cause for concern about exposure exceeding the FCC guidelines. This is admittedly an extremely conservative procedure, but it may be of assistance in making a "first cut" at eliminating sites from further consideration.

IV. Conclusion.

We've highlighted many of the most common concerns and questions raised by the siting of wireless telecommunications and broadcast antennas. Applying the principles outlined in this guide will allow you to make initial conservative judgments about whether RF emissions are or should be of concern, consistent with the FCC's rules.

As we have explained, when first evaluating a siting application for compliance with the FCC's guidelines, you will probably want to consider whether the facility is categorically excluded under the FCC's rules from routine evaluation for compliance. The checklist in Appendix A will guide you in making this determination. Because categorically excluded facilities are unlikely to cause any exposure in excess of the FCC's guidelines, determination that a facility is categorically excluded should generally suffice to end the inquiry.

If a wireless telecommunications facility is not categorically excluded, you may want to evaluate potential exposure using the methods discussed in Part III of this paper and the tables and figures in Appendix B. If the site in question does not exceed the values, then you generally need look no further. Alternately, if the values don't pass muster, you may have a genuine concern. But

remember, there may be other factors (*i.e.*, power level, height, blockages, etc.) that contribute to whether the site complies with FCC guidelines.

If you have questions about compliance, your initial point of exploration should be with the facilities operator in question. That operator is required to understand the FCC's rules and to know how to apply them in specific cases at specific sites. If, after diligently pursuing answers from the operator, you still have genuine questions regarding compliance, you should contact the FCC at one of the numbers listed below. Provision of the information identified in the checklist in Appendix A may assist the FCC in evaluating your inquiry.

General Information: Compliance and Information Bureau, (888) CALL-FCC

> Concerns About RF Emissions Exposure at a Particular Site: Office of Engineering and Technology, RF Safety Program, phone (202) 418-2464, FAX (202) 418-1918, e-mail rfsafety@fcc.gov
>
> Licensing and Site Information Regarding Wireless Telecommunications Services: Wireless Telecommunications Bureau, Commercial Wireless Division, (202) 418-0620
>
> Licensing and Site Information Regarding Broadcast Radio Services: Mass Media Bureau, Audio Services Division, (202) 418-2700
>
> Licensing and Site Information Regarding Television Service (Including DTV): Mass Media Bureau, Video Services Division, (202) 418-1600

Also, note that the RF Safety Program Web site is a valuable source of general information on the topic of potential biological effects and hazards of RF energy. For example, OET recently updated its OET Bulletin 56 ("Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields"). This latest version is available from the program and can be accessed and downloaded from the FCC's web site at:

http://www.fcc.gov/oet/rfsafety/

APPENDIX A

Optional Checklist for Determination

Of Whether a Facility is Categorically Excluded

Optional Checklist for Local Government
To Determine Whether a Facility is Categorically Excluded

Purpose: The FCC has determined that many wireless facilities are unlikely to cause human exposures in excess of RF exposure guidelines. Operators of those facilities are exempt from routinely having to determine their compliance. These facilities are termed "categorically excluded." Section 1.1307(b)(1) of the Commission's rules defines those categorically excluded facilities. This checklist will assist state and local government agencies in identifying those wireless facilities that are categorically excluded, and thus are highly unlikely to cause exposure in excess of the FCC's guidelines. Provision of the information identified on this checklist may also assist FCC staff in evaluating any inquiry regarding a facility's compliance with the RF exposure guidelines.

BACKGROUND INFORMATION

1. Facility Operator's Legal Name: Cellco Partnership dba Verizon Wireless
2. Facility Operator's Mailing Address: One Verizon Way, Baskin Ridge, New Jersey 07920
3. Facility Operator's Contact Name/Title: Operational Headquarters
4. Facility Operator's Office Telephone: (908) 559-2001
5. Facility Operator's Fax: _____
6. Facility Name: Downtown Middletown - Location No. 434703
7. Facility Address: 21347 State Hwy. 175, California 95461 (APN 024-452-07)
8. Facility City/Community: Middletown, County of Lake
9. Facility State and Zip Code: California 95461
10. Latitude: N 38° 45' 08.80"
11. Longitude: W 122° 37' 01.31" (NAD 83)

continue →

Optional Local Government Checklist (page 2)

EVALUATION OF CATEGORICAL EXCLUSION

12. Licensed Radio Service (see attached Table 1): Personal Communications Service
13. Structure Type (free-standing or building/roof-mounted): Free-standing
14. Antenna Type [omnidirectional or directional (includes sectored)]: Directional
15. Height above ground of the lowest point of the antenna (in meters): 18.59 meters AGL
16. ☒ Check if all of the following are true:
    (a) This facility will be operated in the Multipoint Distribution Service, Paging and Radiotelephone Service, Cellular Radiotelephone Service, Narrowband or Broadband Personal Communications Service, Private Land Mobile Radio Services Paging Operations, Private Land Mobile Radio Service Specialized Mobile Radio, Local Multipoint Distribution Service, or service regulated under Part 74, Subpart I (see question 12).
    (b) This facility will not be mounted on a building (see question 13).
    (c) The lowest point of the antenna will be at least 10 meters above the ground (see question 15).

If box 16 is checked, this facility is categorically excluded and is unlikely to cause exposure in excess of the FCC's guidelines. The remainder of the checklist need not be completed. If box 16 is not checked, continue to question 17.

17. Enter the power threshold for categorical exclusion for this service from the attached Table 1 in watts ERP or EIRP* (note: EIRP = (1.64) X ERP): _____
18. Enter the total number of channels if this will be an omnidirectional antenna, or the maximum number of channels in any sector if this will be a sectored antenna:
19. Enter the ERP or EIRP per channel (using the same units as in question 17): _____
20. Multiply answer 18 by answer 19: _____
21. Is the answer to question 20 less than or equal to the value from question 17 (yes or no)?

If the answer to question 21 is YES, this facility is categorically excluded. It is unlikely to cause exposure in excess of the FCC's guidelines.

If the answer to question 21 is NO, this facility is not categorically excluded. Further investigation may be appropriate to verify whether the facility may cause exposure in excess of the FCC's guidelines.

*"ERP" means "effective radiated power" and "EIRP" means "effective isotropic radiated power

TABLE 1: TRANSMITTERS, FACILITIES AND OPERATIONS SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Experimental Radio Services (part 5)	power > 100 W ERP (164 W EIRP)
Multipoint Distribution Service (subpart K of part 21)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP building-mounted antennas: power > 1640 W EIRP
Paging and Radiotelephone Service (subpart E of part 22)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1000 W ERP (1640 W EIRP) building-mounted antennas: power > 1000 W ERP (1640 W EIRP)
Cellular Radiotelephone Service (subpart H of part 22)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP) building-mounted antennas: total power of all channels > 1000 W ERP (1640 W EIRP)

TABLE 1 (cont.)

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Personal Communications Services (part 24)	(1) Narrowband PCS (subpart D): non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP) building-mounted antennas: total power of all channels > 1000 W ERP (1640 W EIRP) (2) Broadband PCS (subpart E): non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 2000 W ERP (3280 W EIRP) building-mounted antennas: total power of all channels > 2000 W ERP (3280 W EIRP)
Satellite Communications (part 25)	all included
General Wireless Communications Service (part 26)	total power of all channels > 1640 W EIRP
Wireless Communications Service (part 27)	total power of all channels > 1640 W EIRP
Radio Broadcast Services (part 73)	all included

TABLE 1 (cont.)

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Experimental, auxiliary, and special broadcast and other program distributional services (part 74)	subparts A, G, L: power > 100 W ERP subpart I: non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP building-mounted antennas: power > 1640 W EIRP
Stations in the Maritime Services (part 80)	ship earth stations only
Private Land Mobile Radio Services Paging Operations (part 90)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1000 W ERP (1640 W EIRP) building-mounted antennas: power > 1000 W ERP (1640 W EIRP)
Private Land Mobile Radio Services Specialized Mobile Radio (part 90)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP) building-mounted antennas: total power of all channels > 1000 W ERP (1640 W EIRP)

TABLE 1 (cont.)

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Amateur Radio Service (part 97)	transmitter output power > levels specified in § 97.13(c)(1) of this chapter
Local Multipoint Distribution Service (subpart L of part 101)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP building-mounted antennas: power > 1640 W EIRP LMDS licensees are required to attach a label to subscriber transceiver antennas that: (1) provides adequate notice regarding potential radiofrequency safety hazards, *e.g.,* information regarding the safe minimum separation distance required between users and transceiver antennas; and (2) references the applicable FCC-adopted limits for radiofrequency exposure specified in § 1.1310 of this chapter.

APPENDIX B

Estimated "Worst Case" Distances that Should be Maintained from Single Cellular, PCS, and Paging Base Station Antennas

Table B1-1. Estimated "worst case" horizontal* distances that should be maintained from a single, omni-directional, **cellular base-station** antenna to meet FCC RF exposure guidelines

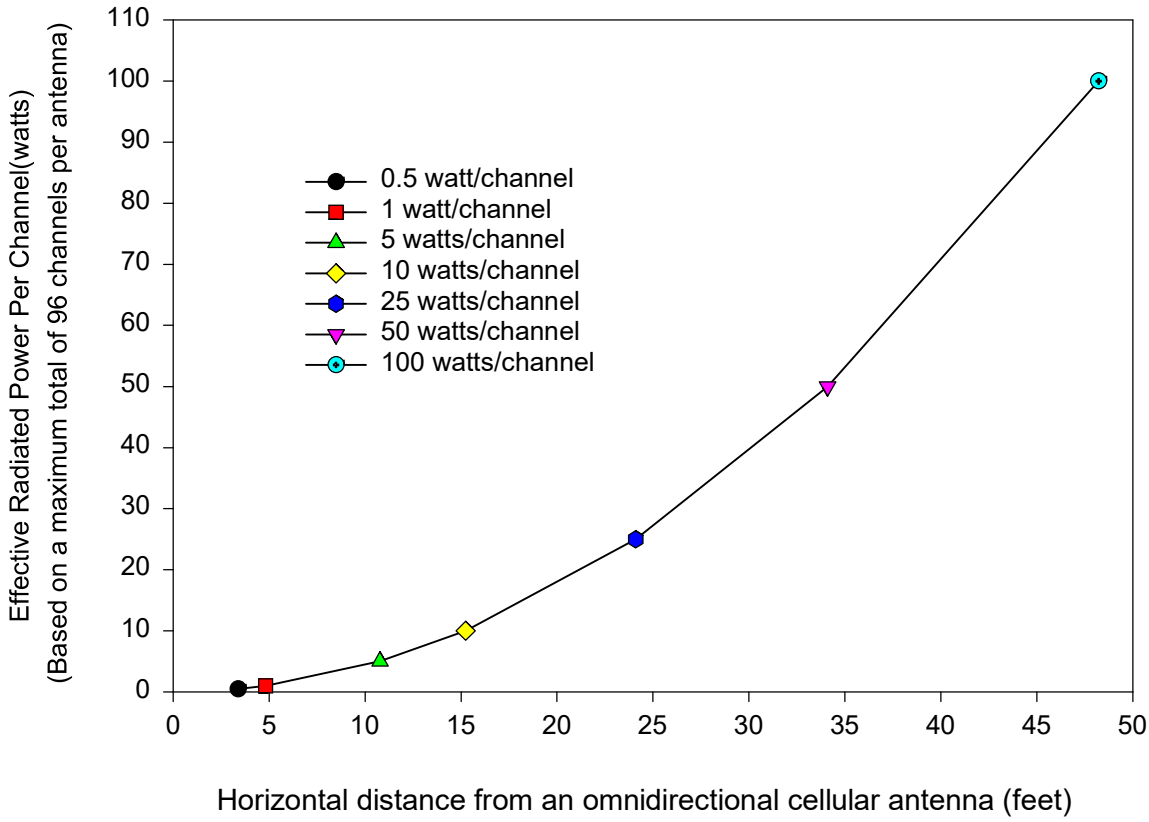
Effective Radiated Power (watts) per channel based on maximum total of 96 channels per antenna	Effective Isotropic Radiated Power (watts) per channel based on a maximum total of 96 channels per antenna	Horizontal* distance (feet) that should be maintained from a single omni-directional cellular antenna
0.5	0.82	3.4
1	1.6	4.8
5	8.2	10.8
10	16.4	15.2
25	41	24.1
50	82	34.1
100	164	48.2

For intermediate values not shown on this table, please refer to the Figure B1-1

*These distances are based on exposure at same level as the antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These estimates are worst case, assuming an omnidirectional antenna using 96 channels. If the systems are using fewer channels, the actual horizontal distances that must be maintained will be less. Cellular omnidirectional antennas transmit more or less equally from the antenna in all horizontal directions and transmit relatively little energy directly toward the ground. Therefore, these distances are even more conservative for "non-horizontal" distances, for example, distances directly below an antenna.

Figure B1-1. Estimated "worst case" horizontal* distances that should be maintained from a single omni-directional **cellular base station** antenna to meet FCC RF exposure guidelines



* These distances are based on exposure at same level as antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These estimates are worst case, assuming an omnidirectional antenna using 96 channels. If the systems are using fewer channels, the actual horizontal distances that must be maintained will be less. Cellular omnidirectional antennas transmit more or less equally from the antenna in all horizontal directions and transmit relatively little energy directly toward the ground.

Table B1-2. Estimated "worst case" horizontal* distances that should be maintained from a single, sectorized, **cellular base-station** antenna to meet FCC RF exposure guidelines

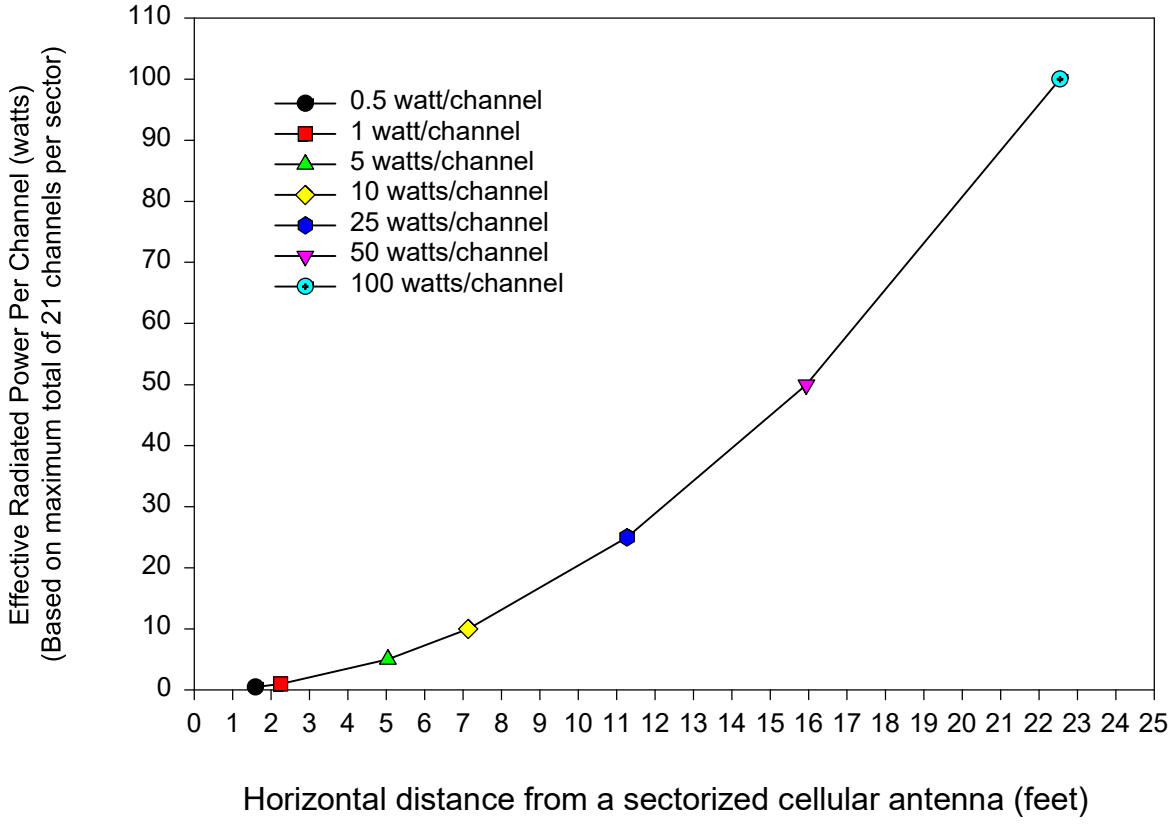
Effective Radiated Power (watts) per channel based on maximum total of 21 channels per sector	Effective Isotropic Radiated Power (watts) per channel based on maximum total of 21 channels per sector	Horizontal* distance (feet) that should be maintained from a single sectorized cellular antenna
0.5	0.82	1.6
1	1.6	2.3
5	8.2	5
10	16.4	7.1
25	41	11.3
50	82	16
100	164	22.6

For intermediate values not shown on this table, please refer to the Figure B1-2

*These distances are based on exposure at same level as the antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These estimates are "worst case," assuming a sectorized antenna using 21 channels. If the systems are using fewer channels, the actual horizontal distances that must be maintained will be less. Cellular sectorized antennas transmit more or less in one direction from the antenna in a horizontal direction and transmit relatively little energy directly toward the ground. Therefore, these distances are even more conservative for "non-horizontal" distances, for example, distances directly below an antenna.

Figure B1-2. Estimated "worst case" horizontal* distances that should be maintained from a single sectorized, **cellular base station** antenna to meet FCC RF exposure guidelines



* These distances are based on exposure at same level as antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These estimates are "worst case", assuming a sectorized antenna using 21 channels. If the systems are using fewer channels, the actual horizontal distances that must be maintained will be less. Cellular sectorized antennas transmit more or less in one direction from the antenna in a horizontal direction and transmit relatively little energy directly toward the ground.

Table B1-3. Estimated "worst case" horizontal* distances that should be maintained from a single sectorized **Broadband PCS base station** antenna to meet FCC RF exposure guidelines

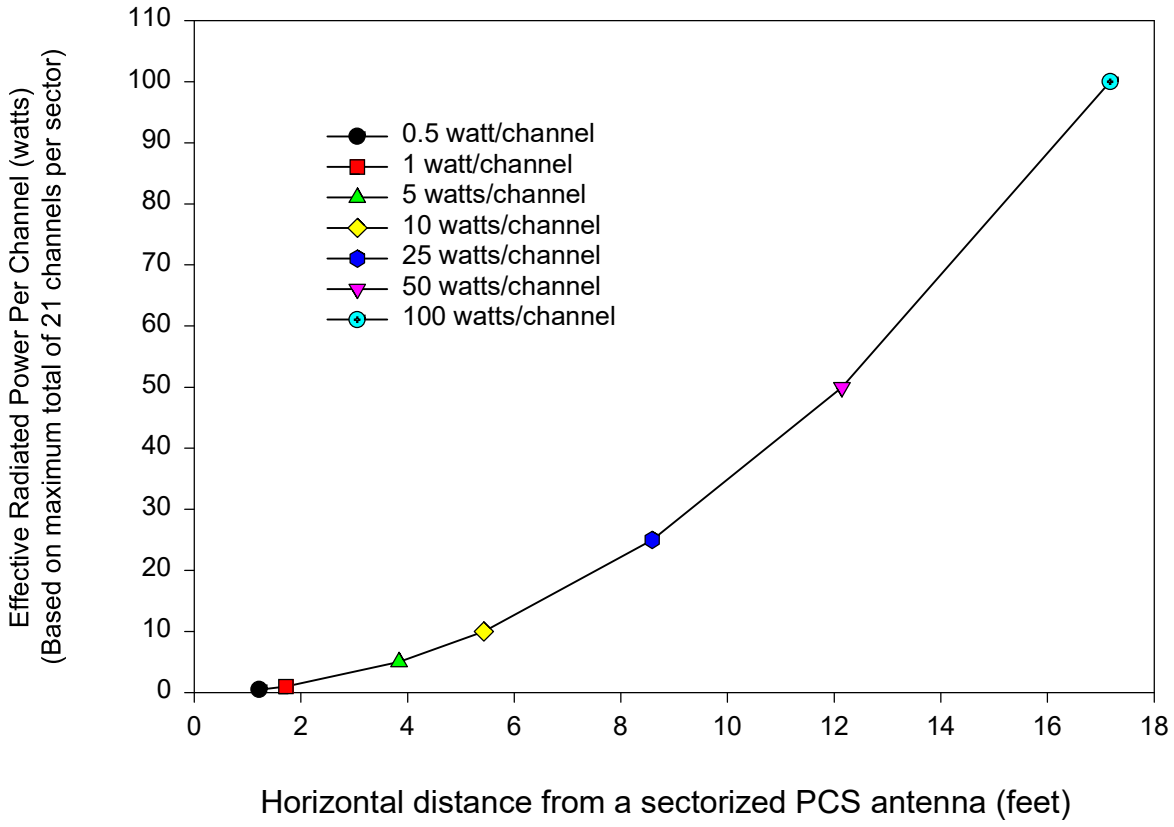
Effective Radiated Power (watts) per channel based on maximum total of 21 channels per sector	Effective Isotropic Radiated Power (watts) per channel based on maximum total of 21 channels per sector	Horizontal* distance (feet) that should be maintained from a single sectorized Broadband PCS antenna
0.5	0.82	1.2
1	1.6	1.7
5	8.2	3.8
10	16.4	5.4
25	41	8.6
50	82	12.1
100	164	17.2

For intermediate values not shown on this table, please refer to the Figure B1-3

*These distances are based on exposure at same level as the antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These estimates are "worst case," assuming a sectorized antenna using 21 channels. If the system is using fewer than 21 channels, the actual horizontal distances that must be maintained will be less. PCS sectorized antennas transmit more or less in one direction from the antenna in a horizontal direction and transmit relatively little energy directly toward the ground. Therefore, these distances are even more conservative for "non-horizontal" distances, for example, distances directly below an antenna.

Figure B1-3. Estimated "worst case" horizontal* distances that should be maintained from a single sectorized, **PCS base station** antenna to meet FCC RF exposure guidelines



* These distances are based on exposure at same level as antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These estimates are "worst case", assuming a sectorized antenna using 21 channels. If the systems are using fewer channels, the actual horizontal distances that must be maintained will be less. PCS sectorized antennas transmit more or less in one direction from the antenna in a horizontal direction and transmit relatively little energy directly toward the ground.

Table B1-4. Estimated "worst case" horizontal* distances that should be maintained from a single omnidirectional **paging** or **narrowband PCS** antenna to meet FCC RF exposure guidelines. Note: this table and the associated figure only apply to the 900-940 MHz band; paging antennas at other frequencies are subject to different values.

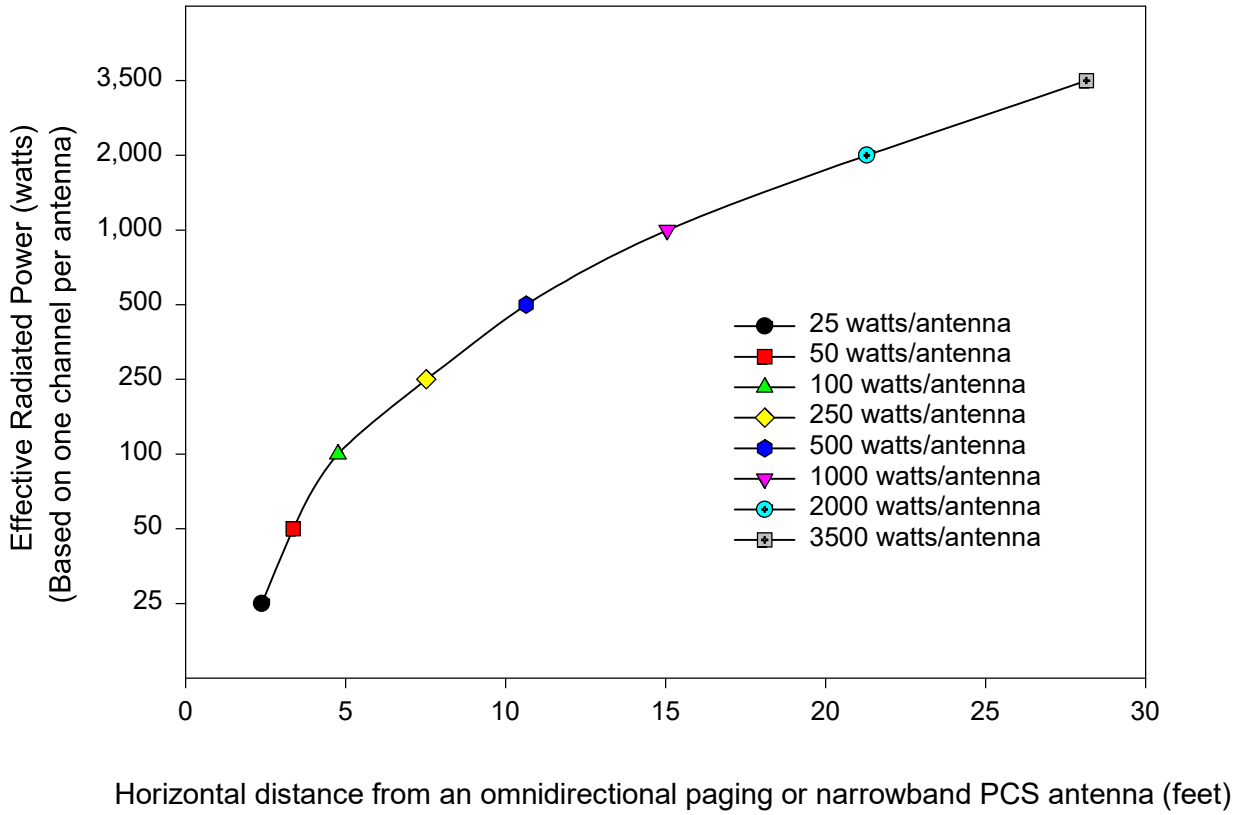
Effective Radiated Power (watts) based on one channel per antenna	Effective Isotropic Radiated Power (watts)	Horizontal* distance (feet) that should be maintained from a single omnidirectional paging or narrowband PCS antenna
50	82	3.4
100	164	4.8
250	410	7.5
500	820	10.6
1,000	1,640	15.1
2,000	3,280	21.3
3,500	5,740	28. 2

For intermediate values not shown on this table, please refer to the Figure B1-4

*These distances are based on exposure at same level as the antenna, for example, on a rooftop or in a building directly across from and at the same height as the antenna.

Note: These distances assume only one frequency (channel) per antenna. Distances would be greater if more than one channel is used per antenna. Omnidirectional paging and narrowband PCS antennas transmit more or less equally from the antenna in all horizontal directions and transmit relatively little energy toward the ground. Therefore, these distances are even more conservative for "non-horizontal" distances, for example, distances directly below an antenna.

Figure B1-4. Estimated "worst case" horizontal* distances that should be maintained from a single omnidirectional **paging** or **narrowband PCS** antenna to meet FCC RF exposure guidelines. Note: this figure and the associated table only apply to the 900-940 MHz band; paging antennas at other frequencies are subject to different values



* These distances are based on exposure at the same level as the antenna, for example, on a rooftop or building directly across from and at the same height as the antenna.

Note: These distances assume only one frequency (channel) per antenna. Distances would be greater if more than one channel is used per antenna. Omnidirectional paging and narrowband PCS antennas transmit more or less equally from the antenna in all horizontal directions and transmit relatively little energy towards the ground.

APPENDIX C

Text of 47 U.S.C. § 332(c)(7)

(7) PRESERVATION OF LOCAL ZONING AUTHORITY.

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

(B) LIMITATIONS.

(i) The regulation of the placement, construction, and modification of personal wireless service facilities by and State or local government or instrumentality thereof (I) shall not unreasonably discriminate among providers of functionally equivalent services; and (II) shall not prohibit or have the effect of prohibiting the provision of personal wireless services.

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

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

(iv) No State or local government or instrumentality thereof may regulate the placement, construction, or modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions.

(v) Any person adversely affected by any final action or failure to act by a State or local government or any instrumentality thereof that is inconsistent with this subparagraph may, within 30 days after such action or failure to act, commence an action in any court of competent jurisdiction. The court shall hear and decide such action on an expedited basis. Any person adversely affected by an act or failure to act by a State or local government or any instrumentality thereof that is inconsistent with clause (iv) may petition the Commission for relief.

(C) DEFINITIONS. For purposes of this paragraph

(i) the term "personal wireless services" means commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services;

(ii) the term "personal wireless service facilities" means facilities for the provision of personal wireless services; and

(iii) the term "unlicensed wireless service" means the offering of telecommunications service using duly authorized devices which do not require individual licenses, but does not mean the provision of direct-to-home satellite services (as defined in section 303(v)).

APPENDIX A

Optional Checklist for Determination

Of Whether a Facility is Categorically Excluded

Optional Checklist for Local Government
To Determine Whether a Facility is Categorically Excluded

Purpose: The FCC has determined that many wireless facilities are unlikely to cause human exposures in excess of RF exposure guidelines. Operators of those facilities are exempt from routinely having to determine their compliance. These facilities are termed "categorically excluded." Section 1.1307(b)(1) of the Commission's rules defines those categorically excluded facilities. This checklist will assist state and local government agencies in identifying those wireless facilities that are categorically excluded, and thus are highly unlikely to cause exposure in excess of the FCC's guidelines. Provision of the information identified on this checklist may also assist FCC staff in evaluating any inquiry regarding a facility's compliance with the RF exposure guidelines.

BACKGROUND INFORMATION

1. Facility Operator's Legal Name: Cellco Partnership dba Verizon Wireless
2. Facility Operator's Mailing Address: One Verizon Way, Baskin Ridge, New Jersey 07920
3. Facility Operator's Contact Name/Title: Operational Headquarters
4. Facility Operator's Office Telephone: (908) 559-2001
5. Facility Operator's Fax: _____
6. Facility Name: Downtown Middletown - Location No. 434703
7. Facility Address: 21347 State Hwy. 175, California 95461 (APN 024-452-07)
8. Facility City/Community: Middletown, County of Lake
9. Facility State and Zip Code: California 95461
10. Latitude: N 38° 45' 08.80"
11. Longitude: W 122° 37' 01.31" (NAD 83)

continue →

Optional Local Government Checklist (page 2)

EVALUATION OF CATEGORICAL EXCLUSION

12. Licensed Radio Service (see attached Table 1): Personal Communications Service
13. Structure Type (free-standing or building/roof-mounted): Free-standing
14. Antenna Type [omnidirectional or directional (includes sectored)]: Directional
15. Height above ground of the lowest point of the antenna (in meters): 18.59 meters AGL
16. ☒ Check if all of the following are true:
    (a) This facility will be operated in the Multipoint Distribution Service, Paging and Radiotelephone Service, Cellular Radiotelephone Service, Narrowband or Broadband Personal Communications Service, Private Land Mobile Radio Services Paging Operations, Private Land Mobile Radio Service Specialized Mobile Radio, Local Multipoint Distribution Service, or service regulated under Part 74, Subpart I (see question 12).
    (b) This facility will not be mounted on a building (see question 13).
    (c) The lowest point of the antenna will be at least 10 meters above the ground (see question 15).

If box 16 is checked, this facility is categorically excluded and is unlikely to cause exposure in excess of the FCC's guidelines. The remainder of the checklist need not be completed. If box 16 is not checked, continue to question 17.

17. Enter the power threshold for categorical exclusion for this service from the attached Table 1 in watts ERP or EIRP* (note: EIRP = (1.64) X ERP): _____
18. Enter the total number of channels if this will be an omnidirectional antenna, or the maximum number of channels in any sector if this will be a sectored antenna:
19. Enter the ERP or EIRP per channel (using the same units as in question 17): _____
20. Multiply answer 18 by answer 19: _____
21. Is the answer to question 20 less than or equal to the value from question 17 (yes or no)?

If the answer to question 21 is YES, this facility is categorically excluded. It is unlikely to cause exposure in excess of the FCC's guidelines.

If the answer to question 21 is NO, this facility is not categorically excluded. Further investigation may be appropriate to verify whether the facility may cause exposure in excess of the FCC's guidelines.

*"ERP" means "effective radiated power" and "EIRP" means "effective isotropic radiated power

TABLE 1: TRANSMITTERS, FACILITIES AND OPERATIONS SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Experimental Radio Services (part 5)	power > 100 W ERP (164 W EIRP)
Multipoint Distribution Service (subpart K of part 21)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP building-mounted antennas: power > 1640 W EIRP
Paging and Radiotelephone Service (subpart E of part 22)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1000 W ERP (1640 W EIRP) building-mounted antennas: power > 1000 W ERP (1640 W EIRP)
Cellular Radiotelephone Service (subpart H of part 22)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP) building-mounted antennas: total power of all channels > 1000 W ERP (1640 W EIRP)

TABLE 1 (cont.)

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Personal Communications Services (part 24)	(1) Narrowband PCS (subpart D): non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP) building-mounted antennas: total power of all channels > 1000 W ERP (1640 W EIRP) (2) Broadband PCS (subpart E): non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 2000 W ERP (3280 W EIRP) building-mounted antennas: total power of all channels > 2000 W ERP (3280 W EIRP)
Satellite Communications (part 25)	all included
General Wireless Communications Service (part 26)	total power of all channels > 1640 W EIRP
Wireless Communications Service (part 27)	total power of all channels > 1640 W EIRP
Radio Broadcast Services (part 73)	all included

TABLE 1 (cont.)

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Experimental, auxiliary, and special broadcast and other program distributional services (part 74)	subparts A, G, L: power > 100 W ERP subpart I: non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP building-mounted antennas: power > 1640 W EIRP
Stations in the Maritime Services (part 80)	ship earth stations only
Private Land Mobile Radio Services Paging Operations (part 90)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1000 W ERP (1640 W EIRP) building-mounted antennas: power > 1000 W ERP (1640 W EIRP)
Private Land Mobile Radio Services Specialized Mobile Radio (part 90)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP) building-mounted antennas: total power of all channels > 1000 W ERP (1640 W EIRP)

TABLE 1 (cont.)

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Amateur Radio Service (part 97)	transmitter output power > levels specified in § 97.13(c)(1) of this chapter
Local Multipoint Distribution Service (subpart L of part 101)	non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and power > 1640 W EIRP building-mounted antennas: power > 1640 W EIRP LMDS licensees are required to attach a label to subscriber transceiver antennas that: (1) provides adequate notice regarding potential radiofrequency safety hazards, *e.g.,* information regarding the safe minimum separation distance required between users and transceiver antennas; and (2) references the applicable FCC-adopted limits for radiofrequency exposure specified in § 1.1310 of this chapter.

Verizon Wireless • Proposed Base Station (Site No. 434703 "Downtown Middletown")
21347 California Highway 175 • Middletown, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 434703 "Downtown Middletown") proposed to be located at 21347 California Highway 175 in Middletown, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install directional panel antennas on the lattice tower sited behind the building located at 21347 California Highway 175 in Middletown. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

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

Wireless Service Band	Transmit Frequency	"Uncontrolled" Public Limit	Occupational Limit (5 times Public)
Microwave (point-to-point)	1–80 GHz	1.0 mW/cm^2	5.0 mW/cm^2
Millimeter-wave	24–47	1.0	5.0
Part 15 (WiFi & other unlicensed)	2–6	1.0	5.0
BRS (Broadband Radio)	2,490 MHz	1.0	5.0
WCS (Wireless Communication)	2,305	1.0	5.0
AWS (Advanced Wireless)	2,110	1.0	5.0
PCS (Personal Communication)	1,930	1.0	5.0
Cellular	869	0.58	2.9
SMR (Specialized Mobile Radio)	854	0.57	2.85
700 MHz	716	0.48	2.4
[most restrictive frequency range]	30–300	0.20	1.0

General Facility Requirements

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

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

Computer Modeling Method

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

Site and Facility Description

Based upon information provided by Verizon, including construction drawings by MST Architects, Inc., dated December 21, 2018, it is proposed to install nine CommScope Model SBNHH-1D65B directional panel antennas on the existing 60-foot lattice tower sited behind the single-story AT&T building located at 21347 California Highway 175 in the Middletown area of unincorporated Lake County. The antennas would employ no downtilt, would be mounted at an effective height of about 57 feet above ground, and would be oriented in groups of three at about 120° spacing, to provide service in all directions. The maximum effective radiated power in any direction would be 34,580 watts, representing simultaneous operation at 12,590 watts for AWS, 11,490 watts for PCS, 5,130 watts for cellular, and 5,370 watts for 700 MHz service. There is reported one omnidirectional "whip" antenna presently installed on the tower, presumably in intermittent, low-power use by AT&T.

Study Results

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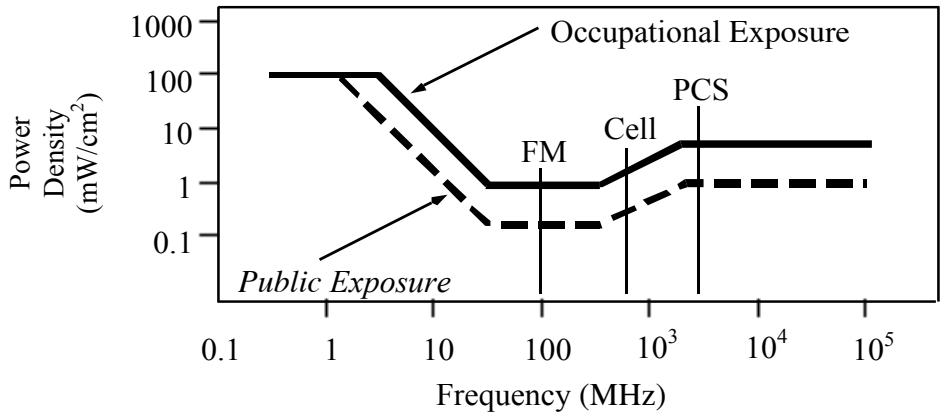

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Verizon proposes to install directional panel antennas on the lattice tower sited behind the building located at 21347 California Highway 175 in Middletown. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

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

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

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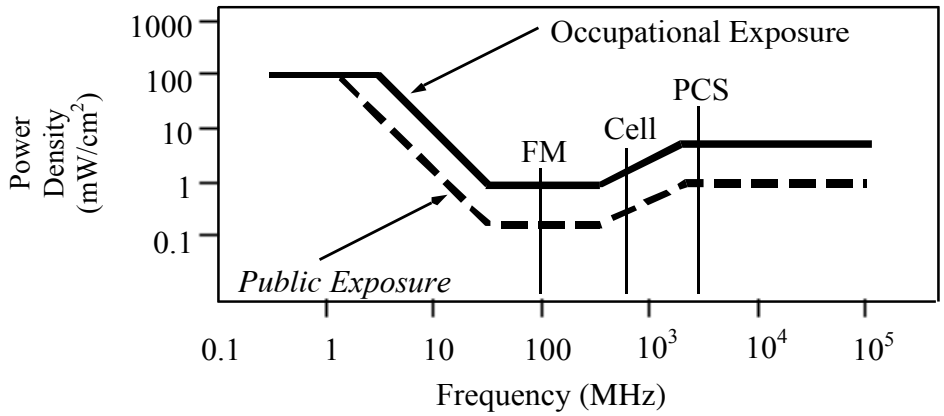

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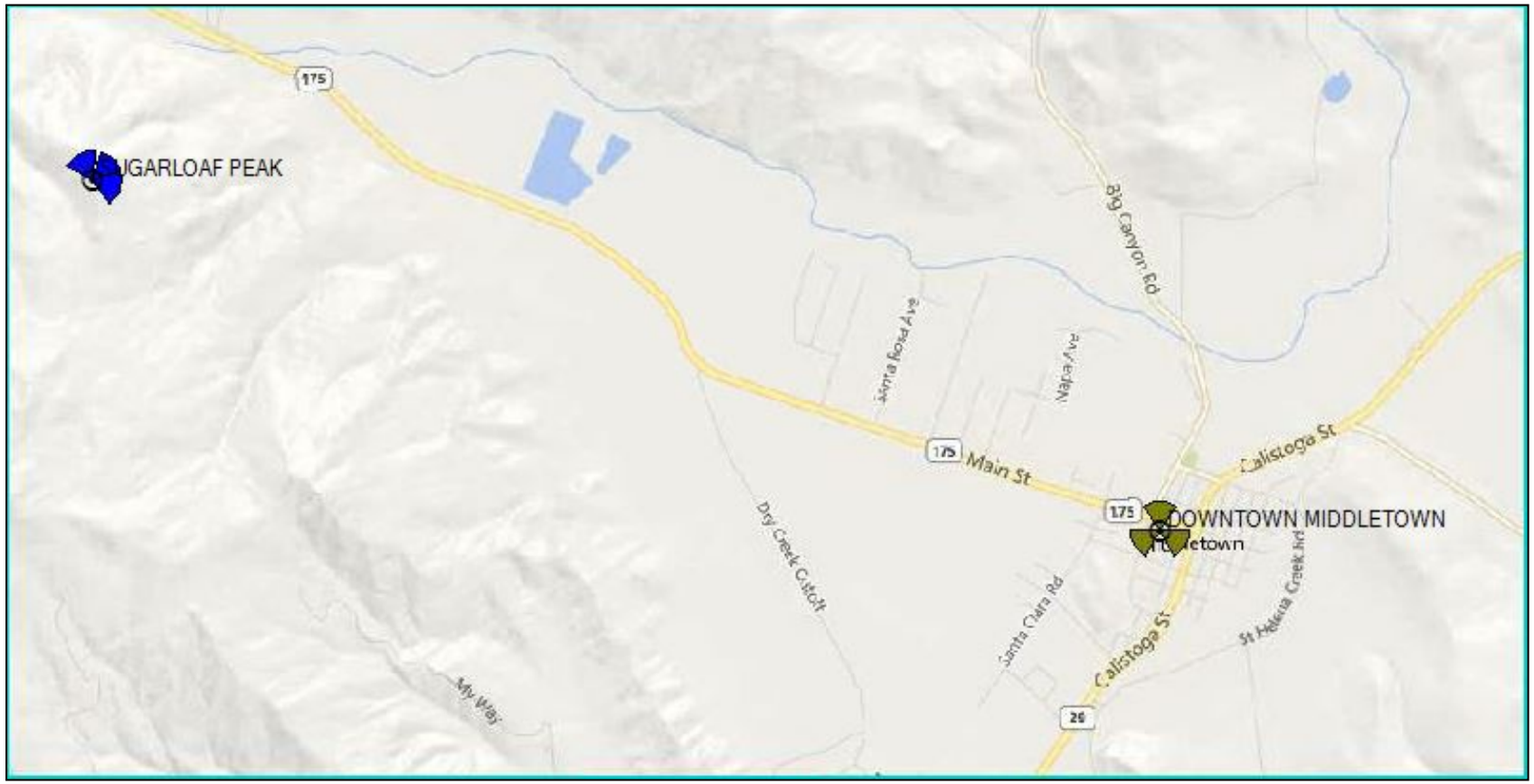
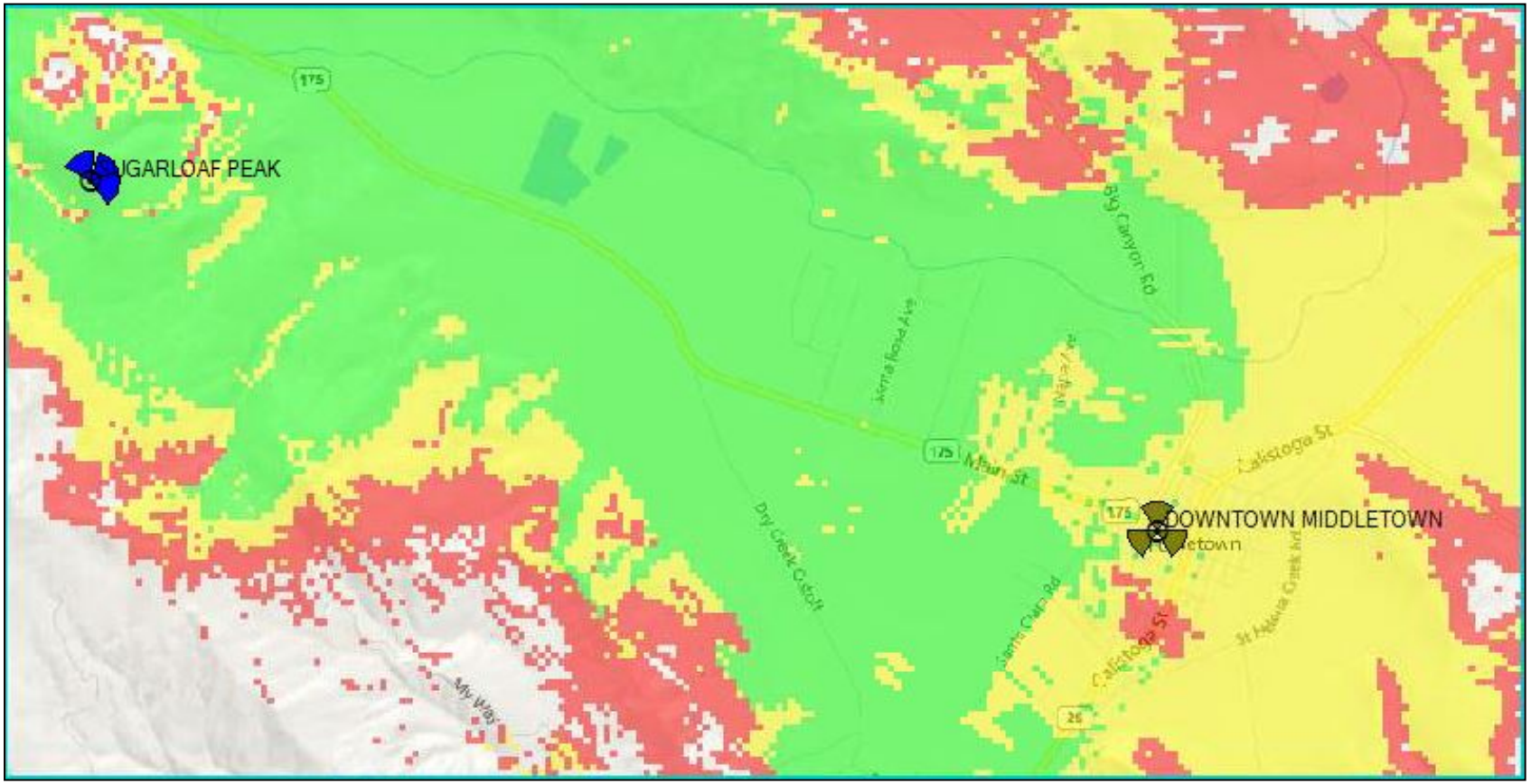


Without Downtown Middletown

In-Building coverage
Out door coverage
Marginal coverage

Current On Air
Solutions in works



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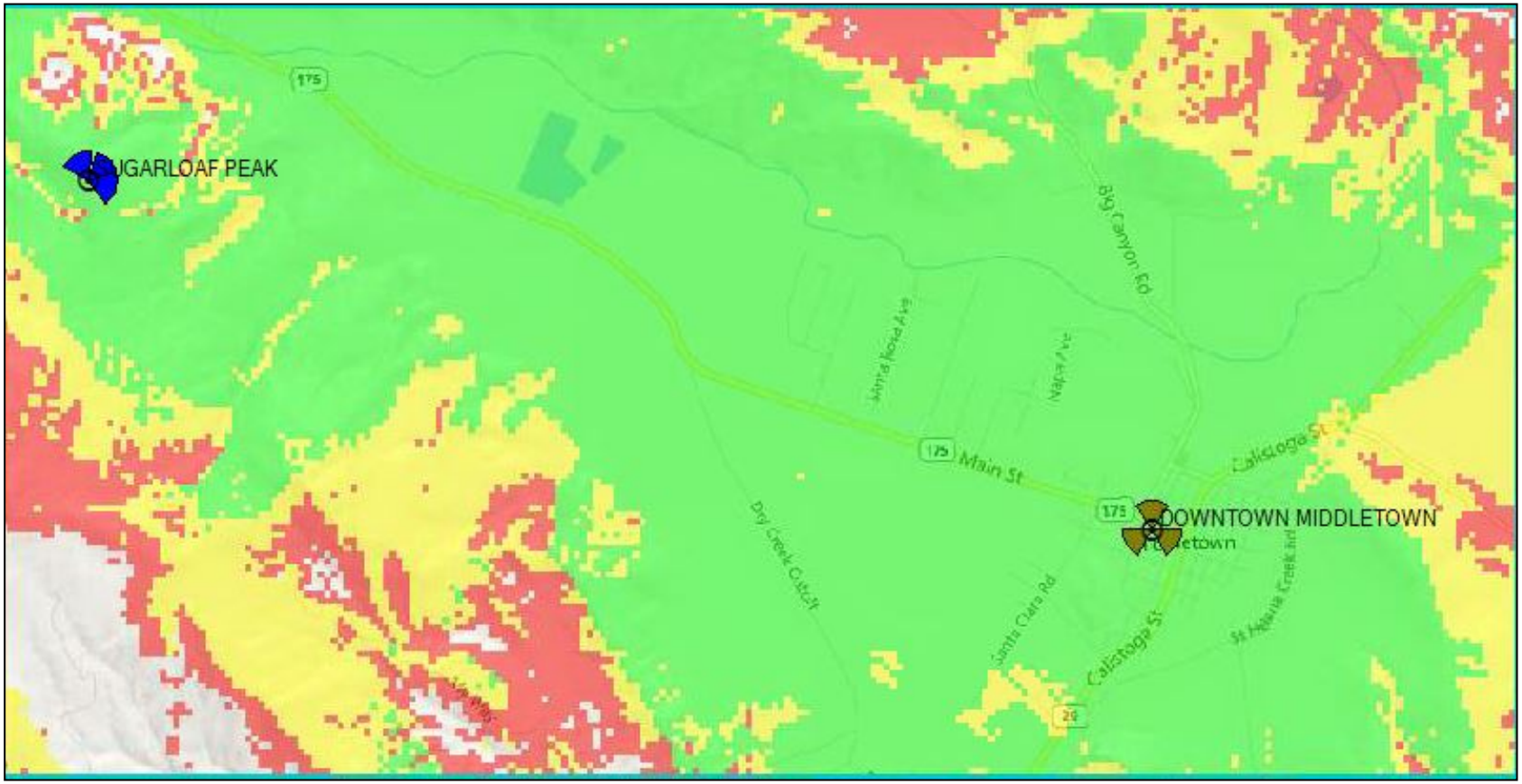

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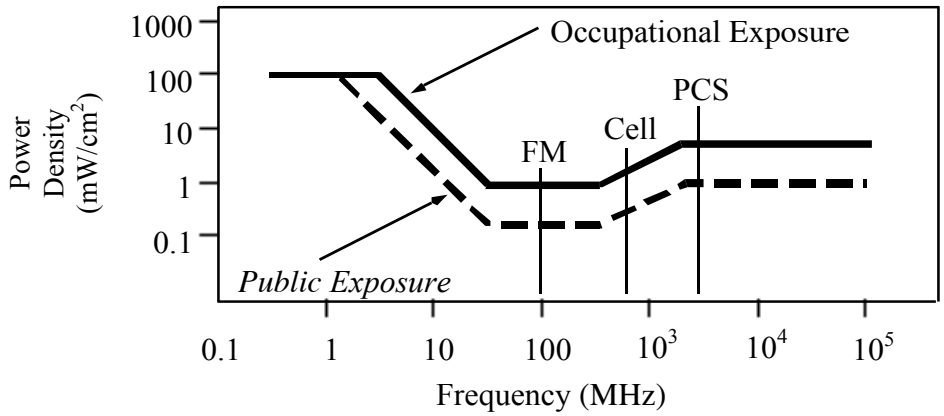
1,500 – 100,000	137	*61.4*	0.364	*0.163*	5.0	*1.0*



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

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

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

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

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

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

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

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

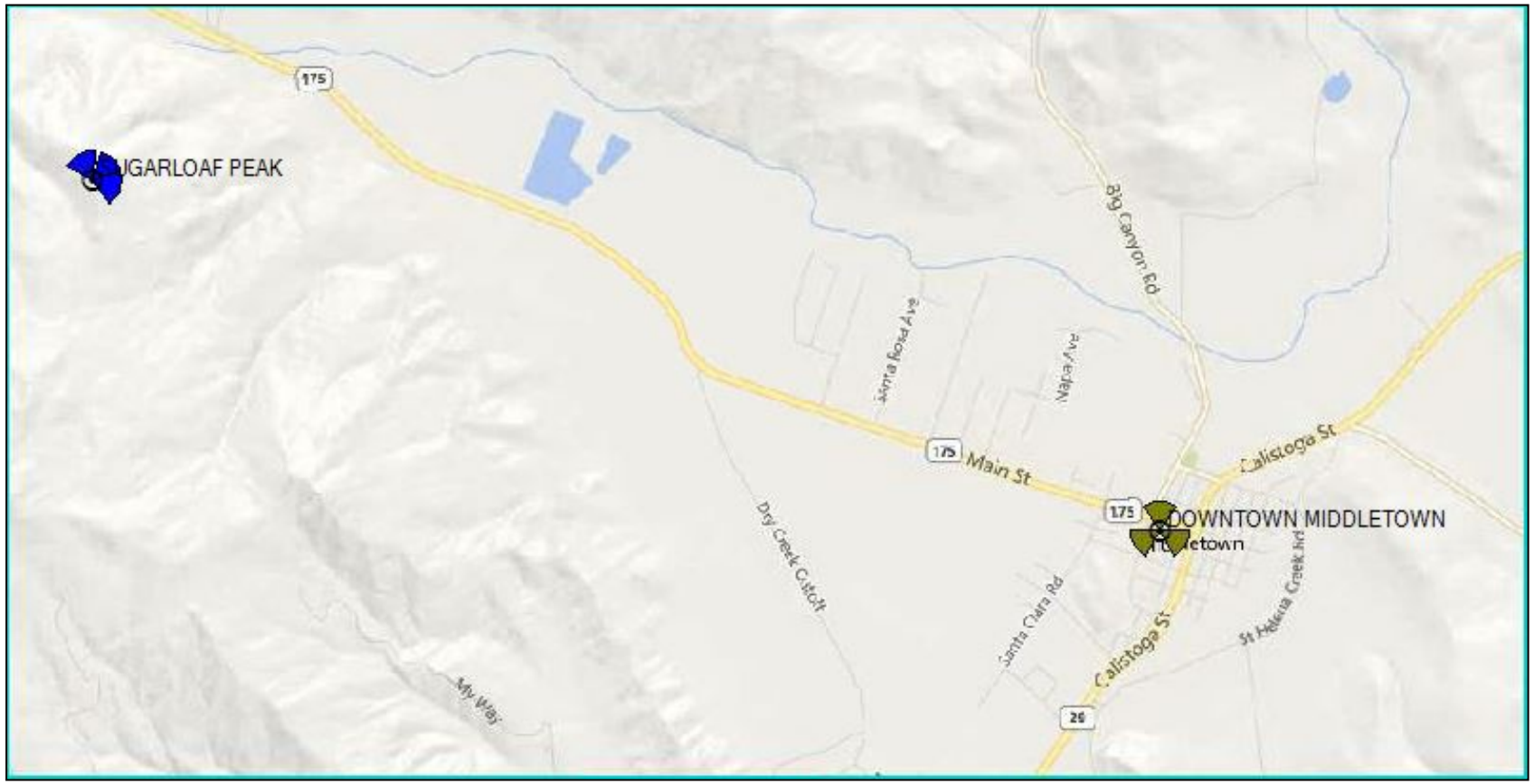
Far Field.
OET-65 gives this formula for calculating power density in the far field of an individual RF source:

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

where ERP = total ERP (all polarizations), in kilowatts,
RFF = three-dimensional relative field factor toward point of calculation, and
D = distance from antenna effective height to point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula is used in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program also allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings, to obtain more accurate projections.

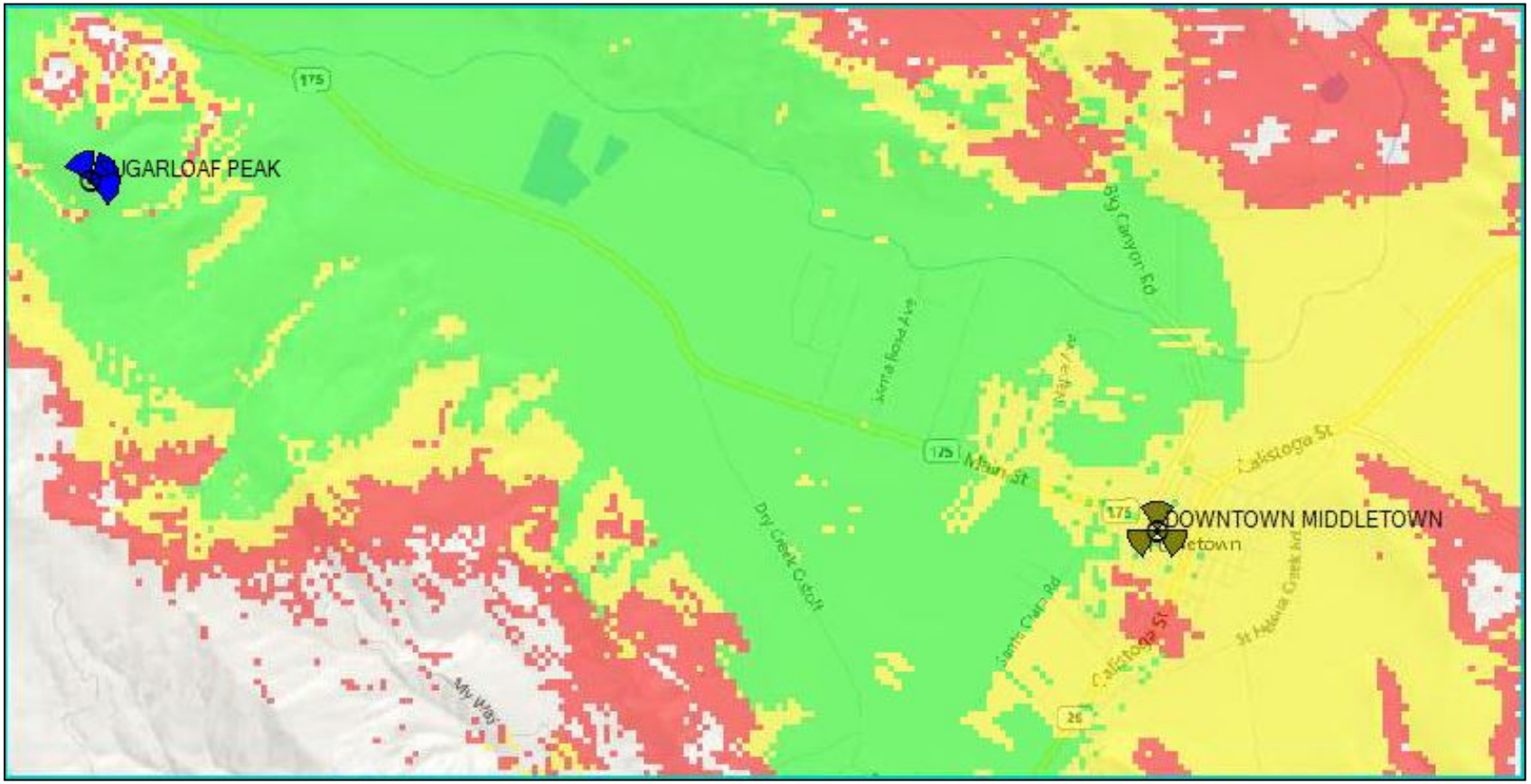
Coverage Area



Without Downtown Middletown

In-Building coverage
Out door coverage
Marginal coverage

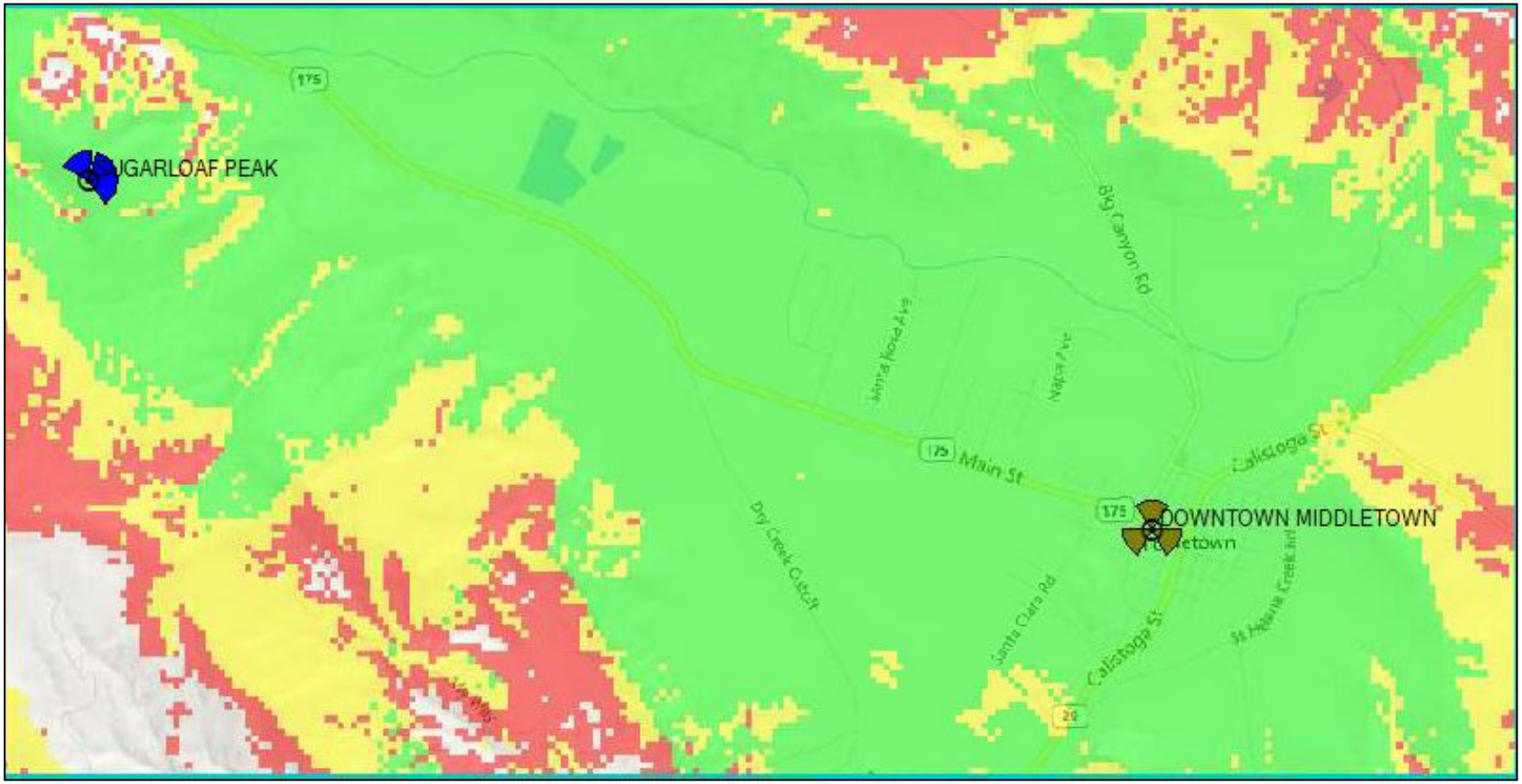
Current On Air
Solutions in works



With Downtown Middletown

In-Building coverage
Out door coverage
Marginal coverage

Current On Air
Solutions in works



Phil Auer Surveying
14407 Corte Lejos, Bakersfield, CA 93314
Phone: (661) 587-6129
Mobile: (510) 714-7224
E-mail: Pasls5075@att.net

Verizon Wireless
PCS Equipment Survey Form

Project Name: Downtown Middletown
Project Site Location: 21347 State Hwy. 175, Middletown, CA 95461
Date of Field Visit:

GPS Point
NAD 83 Coordinates
Latitude: N38°45'08.80" Longitude: W122°37'01.31"

ELEVATION of Ground (NAVD 88)	1116.0'	AMSL
HEIGHT of Structure [Top of (E) Lightning Rod]	64.1'	AGL
OVERALL height of Structure [Top of (E) Lightning Rod]	1180.1'	AMSL

Certification: I, the undersigned do hereby certify the latitude and longitude and elevations listed above are based on a field survey done under my supervision, and that the accuracy, latitude and longitude meet or exceed the Federal Aviation Administration 1-A Standard and that they are true and accurate to the best of my knowledge and belief.

Signature _____ Date: 12/22/17

Seal

LICENSED LAND SURVEYOR
OLIVER PHILIP AUER
NO 5075
06-30-19
(Exp.____)
STATE OF CALIFORNIA

Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign	File Number
WQTX823	0007523126
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
01-18-2017	01-18-2017	01-27-2027	01-19-2017

Market Number	Channel Block	Sub-Market Designator
BTA404	C	24

Market Name
San Francisco-Oakland-San Jose

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

This authorization is conditioned upon the full and timely payment of all monies due pursuant to Sections 1.2110 and 24.711 of the Commission's Rules and the terms of the Commission's installment plan as set forth in the Note and Security Agreement executed by the licensee. Failure to comply with this condition will result in the automatic cancellation of this authorization.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

This license may not authorize operation throughout the entire geographic area or spectrum identified on the hardcopy version. To view the specific geographic area and spectrum authorized by this license, refer to the Spectrum and Market Area information under the Market Tab of the license record in the Universal Licensing System (ULS). To view the license record, go to the ULS homepage at http://wireless.fcc.gov/uls/index.htm?job=home and select “License Search”. Follow the instructions on how to search for license information.

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Spectrum Lease associated with this license. See Spectrum Leasing Arrangement Letter dated 04/17/2006 and File No. 0002067089.

The Spectrum Leasing Arrangement, which became effective upon approval of application file number 00020670889, was terminated on 05/11/2005. See file number 0002169014.

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQTX823 **File Number:** 0007523126 **Print Date:** 01-19-2017

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status

Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign	File Number
WQJQ694	
Radio Service	
WU - 700 MHz Upper Band (Block C)	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
11-26-2008	09-11-2018	06-13-2019	

Market Number	Channel Block	Sub-Market Designator
REA006	C	0

Market Name
West

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
06-13-2013	06-13-2019		

Waivers/Conditions:

If the facilities authorized herein are used to provide broadcast operations, whether exclusively or in combination with other services, the licensee must seek renewal of the license either within eight years from the commencement of the broadcast service or within the term of the license had the broadcast service not been provided, whichever period is shorter in length. See 47 CFR §27.13(b).

This authorization is conditioned upon compliance with section 27.16 of the Commission's rules

Conditions:
Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

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FCC 601-MB
October 2017

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQJQ694 **File Number:** **Print Date:**

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status

Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign	File Number
WQTX815	
Radio Service AW - AWS (1710-1755 MHz and 2110-2155 MHz)	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
04-22-2014	11-01-2016	12-18-2021	

Market Number	Channel Block	Sub-Market Designator
CMA344	A	2

Market Name
California 9 - Mendocino

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is conditioned upon the licensee, prior to initiating operations from any base or fixed station, making reasonable efforts to coordinate frequency usage with known co-channel and adjacent channel incumbent federal users operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations. See, e.g., FCC and NTIA Coordination Procedures in the 1710-1755 MHz Band, Public Notice, FCC 06-50, WTB Docket No. 02-353, rel. April 20, 2006.

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

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Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQTX815 **File Number:** **Print Date:**

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status

Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign	File Number
WQGB225	
Radio Service AW - AWS (1710-1755 MHz and 2110-2155 MHz)	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
11-29-2006	11-01-2016	11-29-2021	

Market Number	Channel Block	Sub-Market Designator
BEA163	B	3

Market Name
San Francisco-Oakland-San Jose

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date

Waivers/Conditions:

This authorization is conditioned upon the licensee, prior to initiating operations from any base or fixed station, making reasonable efforts to coordinate frequency usage with known co-channel and adjacent channel incumbent federal users operating in the 1710-1755 MHz band whose facilities could be affected by the proposed operations. See, e.g., FCC and NTIA Coordination Procedures in the 1710-1755 MHz Band, Public Notice, FCC 06-50, WTB Docket No. 02-353, rel. April 20, 2006.

Conditions:

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FCC 601-MB
October 2017

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQGB225 **File Number:** **Print Date:**

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status

Federal Communications Commission

Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: CELLCO PARTNERSHIP

ATTN: REGULATORY
CELLCO PARTNERSHIP
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign	File Number
WQCV287	0007523124
Radio Service CW - PCS Broadband	

FCC Registration Number (FRN): 0003290673

Grant Date	Effective Date	Expiration Date	Print Date
01-18-2017	01-18-2017	01-27-2027	01-19-2017

Market Number	Channel Block	Sub-Market Designator
BTA404	C	22

Market Name
San Francisco-Oakland-San Jose

1st Build-out Date	2nd Build-out Date	3rd Build-out Date	4th Build-out Date
01-27-2002			

Waivers/Conditions:

This authorization is subject to the condition that, in the event that systems using the same frequencies as granted herein are authorized in an adjacent foreign territory (Canada/United States), future coordination of any base station transmitters within 72 km (45 miles) of the United States/Canada border shall be required to eliminate any harmful interference to operations in the adjacent foreign territory and to ensure continuance of equal access to the frequencies by both countries.

This authorization is conditioned upon the full and timely payment of all monies due pursuant to Sections 1.2110 and 24.711 of the Commission's Rules and the terms of the Commission's installment plan as set forth in the Note and Security Agreement executed by the licensee. Failure to comply with this condition will result in the automatic cancellation of this authorization.

Conditions:

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Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQCV287 **File Number:** 0007523124 **Print Date:** 01-19-2017

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

Licensee Name: CELLCO PARTNERSHIP

Call Sign: WQCV287 **File Number:** 0007523124 **Print Date:** 01-19-2017

700 MHz Relicensed Area Information:

Market	Market Name	Buildout Deadline	Buildout Notification	Status

RECEIVED

MAY 01 2019

LAKE COUNTY COMMUNITY
DEVELOPMENT DEPT

verizon
2785 Mitchell Drive
Walnut Creek, CA 94598

April 30, 2019

To: Mark Roberts, Senior Planner, Lake County Community Development Department

From: Snehil Tiwari, Radio Frequency Design Engineer
Verizon Wireless Network Engineering Department

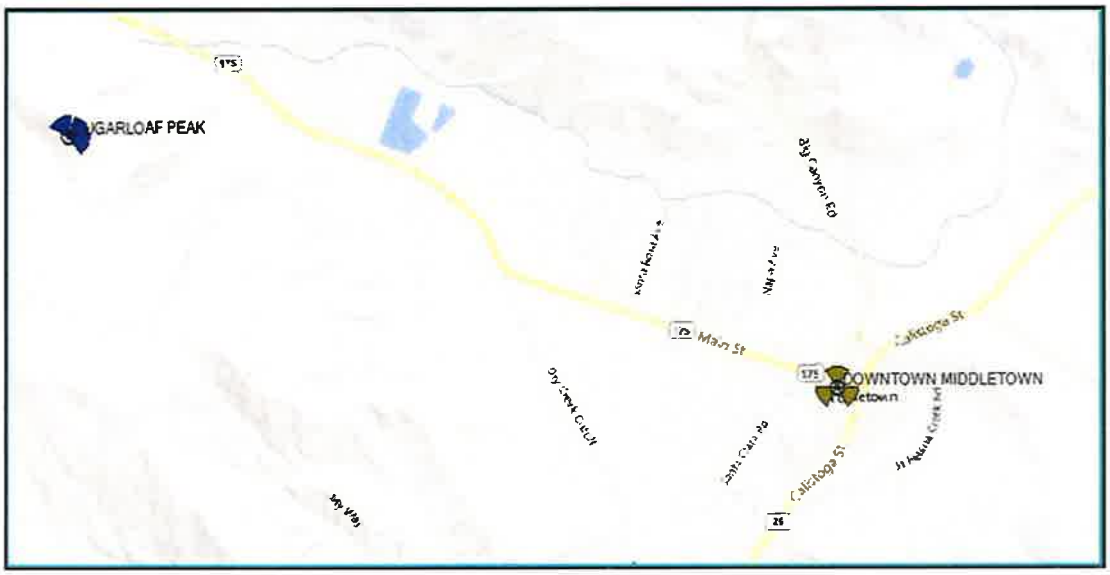
Subject: Statement in Support of Verizon Wireless's Proposed Telecommunications Facility,

Executive Summary

Verizon Wireless has identified a significant gap in its fourth-generation long-term evolution (LTE) service in the City of Middletown in Lake County. This area currently receives inadequate LTE service coverage from the existing Verizon Wireless SUGARLOAF PEAK facility located 3.15 miles west of the proposed facility.

As a result of terrain and distance of existing facilities, there is an absence of LTE in-building and in-vehicle service coverage in the city of Middletown. Weak signal from distant facilities also leads to performance issues for customers and the greater network. The majority of Verizon Wireless's LTE service is provided using AWS spectrum, which requires facilities closer together and closer to the end user in order to provide reliable LTE service.

Existing Verizon Wireless Network



Coverage Gap

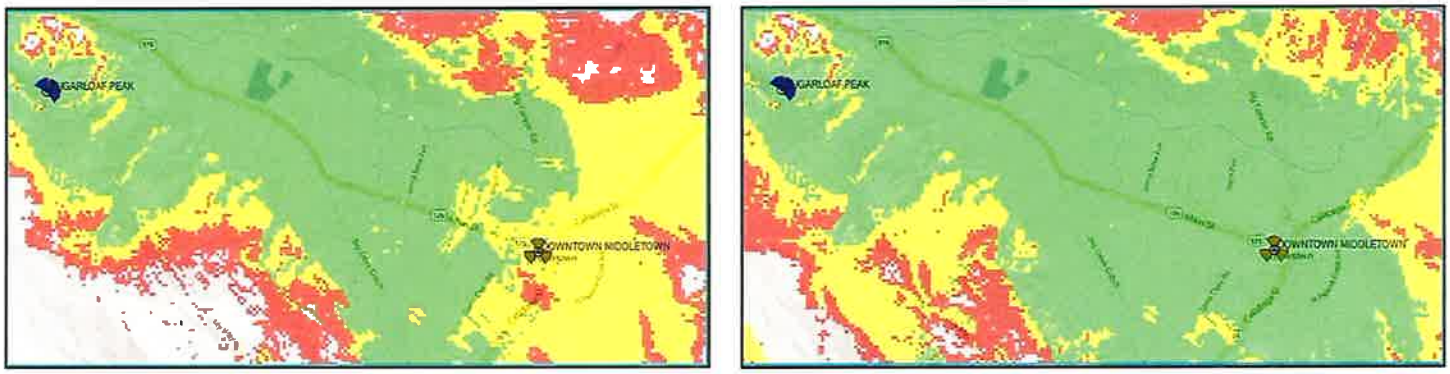
Verizon Wireless is experiencing a significant gap in LTE coverage in the center of Middletown. In-building service is lacking in developed areas between the main st and Calistoga st. The Proposed Facility will provide new in-building service to a population of 1400 residents.

Reliable in-vehicle service is also lacking within this area. Portions of city of Middletown area currently lack reliable in-vehicle service. The Proposed Facility will provide reliable new in-vehicle service to the city of Middletown.

Overall, the Proposed Facility will bring improved service to 1.4 square miles in the city center and neighborhood. Graphic descriptions of the current coverage gap and service from the proposed facility are shown in the following maps.

Coverage plot maps like those below depict the anticipated level of signal, and therefore the projected coverage, provided by a site at a given location. The areas in green reflect good coverage that meets or exceed thresholds to provide consistent and reliable network coverage in homes and in vehicles. The areas in yellow and red depict decreasing levels of coverage, with yellow areas generally representing reliable outdoor coverage only and red areas depicting poor service areas with marginal coverage.

Existing LTE Coverage *Proposed LTE Coverage*



In-building Coverage (-85 dB RSRP)
Outdoor Coverage (-95 dB RSRP)
Marginal Coverage (-105 dB RSRP)

Conclusion

As cellular networks mature and expand, distant sites must be supplemented with more sites closer to customers. The LTE technology used by Verizon Wireless to provide fourth-generation service requires facilities closer to customers, and this technology cannot be provided by the current distant sites. A lack of reliable service due to topography and distant facilities has resulted in the Significant Gap in Verizon Wireless LTE coverage in the city of Middletown. Verizon Wireless must deploy the Proposed Facility to provide reliable LTE service to customers in the area of the Significant Gap.

Please feel free to contact me with any questions or comments regarding Verizon Wireless's Proposed Facility.

Respectfully submitted,

Snehil Tiwari
RF Design Engineer
Network Engineering Department
Verizon Wireless