



TOWN OF PORTOLA VALLEY

7:00 PM – Special Joint Meeting of the Planning and
Architectural Site Control Commissions
Wednesday, September 20, 2017
Historic Schoolhouse
765 Portola Road, Portola Valley, CA 94028

SPECIAL JOINT MEETING AGENDA

7:00 PM - CALL TO ORDER AND ROLL CALL

Commissioners Goulden, Hasko, Von Feldt, Vice-Chair Targ, Chair Gilbert
Commissioners Breen, Koch, Wilson, Vice Chair Sill and Chair Ross

ORAL COMMUNICATIONS

Persons wishing to address the Planning Commission on any subject may do so now. Please note however, that the Planning Commission is not able to undertake extended discussion or action tonight on items not on the agenda.

NEW BUSINESS

1. [Wireless Distributed Antenna System Discussion](#)

ADJOURN TO REGULAR MEETING OF THE PLANNING COMMISSION

REGULAR MEETING AGENDA

CALL TO ORDER AND ROLL CALL

Commissioners Goulden, Hasko, Von Feldt, Vice-Chair Targ, Chair Gilbert

ORAL COMMUNICATIONS

Persons wishing to address the Planning Commission on any subject may do so now. Please note however, that the Planning Commission is not able to undertake extended discussion or action tonight on items not on the agenda.

NEW BUSINESS

1. [Preliminary Review of a Proposal to Renew a Conditional Use Permit and Update an Existing Wireless Communication Facility, T-Mobile, 3530 Alpine Road, File # PLAN_USE 00005-2017 \(Staff: A. Cassidy\)](#)
2. [Preliminary Review of a Conditional Use Permit for a New Wireless Communication Facility, T-Mobile, 700 Portola Road, File # PLAN_USE 00004-2017 \(Staff: A. Cassidy\)](#)

COMMISSION, STAFF, COMMITTEE REPORTS AND RECOMMENDATIONS

APPROVAL OF MINUTES

ADJOURNMENT

ASSISTANCE FOR PEOPLE WITH DISABILITIES

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Planning Department at (650) 851-1700. Notification 48 hours prior to the meeting will enable the Town to make reasonable arrangements to ensure accessibility to this meeting.

AVAILABILITY OF INFORMATION

Any writing or documents provided to a majority of the Town Council or Commissions regarding any item on this agenda will be made available for public inspection at Town Hall located 765 Portola Road, Portola Valley, CA during normal business hours.

Copies of all agenda reports and supporting data are available for viewing and inspection at Town Hall and at the Portola Valley Library located adjacent to Town Hall.

PUBLIC HEARINGS

Public Hearings provide the general public and interested parties an opportunity to provide testimony on these items. If you challenge any proposed action(s) in court, you may be limited to raising only issues you or someone else raised at the Public Hearing(s) described in this agenda, or in written correspondence delivered to the Planning Commission at, or prior to, the Public Hearing(s).

There are no written materials for the Wireless Distributed Antenna System Discussion.



TOWN OF PORTOLA VALLEY STAFF REPORT

TO: Planning Commission

FROM: Arly Cassidy, Associate Planner

DATE: September 20, 2017

RE: Preliminary Review of a Proposal to Renew a Conditional Use Permit and Update a Wireless Communication Facility, T-Mobile, Town Right-of-Way across from 3530 Alpine Road, File # PLAN_USE 5-2017

RECOMMENDATION

Staff recommends that the Planning Commission convene a subcommittee to review wireless facilities and offer comments and direction on the proposed use permit renewal and update by T-Mobile at 3530 Alpine Road.

BACKGROUND

T-Mobile is a telecommunications company with multiple wireless facilities in Portola Valley. In an effort to update their existing facilities and the permitting for such, they are applying to renew an existing use permit for wireless communication facilities on a telephone pole in the public right-of-way across from 3530 Alpine Road, and to update the facility. The pole sits on the east side of town and on the east side of Alpine Road, just north of the driveway for 3530 Alpine Road (See Vicinity Map, Attachment 1).

In 1999 the Planning Commission approved a conditional use permit for a wireless communication facility in this location for Pacific Bell (Resolution No. 1999-385, Attachment 2). In 2006 the Planning Commission amended this use permit to allow for additional equipment, and limited the life of the permit to five years. At this point ownership changed to T-Mobile. The staff report from January 11, 2006 describes the amendment and includes the conditions of approval (Attachment 3). The T-Mobile facility has continued its operation but the use permit expired in 2011. T-Mobile would now like to renew the use permit and modernize the existing equipment, which includes installing new equipment boxes, placing the antennae further from the pole, and shifting all equipment boxes to a metal pole mount on the telephone pole. No ground mounted equipment exists nor is proposed. Documents submitted in support of the use permit renewal include (Attachments 4-6):

- Photographic Simulation, received April 26, 2017
- L21 Predicted Coverage map, received April 26, 2017

- Radio Frequency Electromagnetic Fields Exposure Report, received April 26, 2017
- Project plans, received August 25, 2017

CODE REQUIREMENTS

Section 18.36.020 of the Municipal Code allows wireless communication facilities in all zoning districts as conditional uses. In order to grant a conditional use permit, the Planning Commission must make the following findings pursuant to PVMC Sections 18.72.130 and 18.41.060.B.

1. The proposed use or facility is properly located in relation to the community as a whole and to land uses and transportation and services facilities in the vicinity.
2. The site for the proposed use is adequate in size and shape to accommodate the proposed use and all yards, open spaces, walls and fences, parking, loading, and landscaping and such other features as may be required by this title or in the opinion of the commission be needed to assure that the proposed use will be reasonably compatible with land uses normally permitted in the surrounding area and will insure the privacy and rural outlook of neighboring residences.
3. The site for the proposed use will be served by streets and highways of adequate width and pavement type to carry the quantity and kind of traffic generated by the proposed use.
4. The proposed use will not adversely affect the abutting property or the permitted use thereof.
5. The site for the proposed use is demonstrated to be reasonably safe from or can be made reasonably safe from hazards of storm water runoff, soil erosion, earth movement, earthquake and other geologic hazards.
6. The proposed use will be in harmony with the general purpose and intent of this title and the general plan.
7. When this title or the town general plan specifies that a proposed use shall serve primarily the town and its spheres of influence, the applicant shall have demonstrated that a majority of business of the proposed use will come from the area immediately or within a reasonable period of time. In making such a demonstration, all similar uses in the town and its sphere of influence shall explicitly be taken into consideration by the applicant.
8. The placement, construction, or modification of the facility in the proposed location is necessary for the provision of wireless communication services to close a significant gap in coverage in the town.
9. The proposed site location and facility design have the least potential for adverse impacts and are the least intrusive means to close the service gap when compared to other feasible locations and system designs.

DISCUSSION

This is a request to renew conditional use permit X7D-163, and to allow for the installation and operation of antennas and associated equipment for a T-Mobile wireless communications facility located within the Alpine Road right-of-way. The proposal includes two new cabinets and two new diplexers, the relocation of the three existing antennas two feet (2') minimum away from the pole towards the north, west and south, and the placement of all new and existing cabinets onto a metal pole mounting system. The antennas themselves will not change, and the majority of the equipment boxes are existing and will remain.

The two new equipment boxes are a router and a ciena box, used primarily for data and broadband. The new diplexers are miniature and will be mounted directly onto the existing cabinets. The existing equipment boxes include two T-Mobile cabinets, a power box with shutdown switch, and two telco boxes. The five existing and two new equipment boxes will all be mounted onto a vertical metal mount, labeled as JPAK-EM-100-08 Mount on the plans. This mount attaches to the pole along its length and extends out by less than a foot, with an aluminum channel running vertically in parallel to the pole, to which equipment can be attached. The new arrangement shows the equipment to be better clustered and placed higher up from the ground.

Current regulation limits local review of applications for installations of wireless facilities. While local zoning authority is preserved, there are significant limitations. However, the Town can take significant steps to control the aesthetic/visual impacts of the facilities as long as those steps don't result in making it impossible for the company to provide service to the area.

A note on sheet C-5 states that all equipment will be painted to match the pole. No tree trimming is required for installation, and an existing tree to the north shields view of the pole from drivers headed into town on Alpine Road. In the past, the Town has requested that the antenna be as narrow and flush mounted as feasible.

The Town's Wireless Communication Facilities ordinance provides incentives for DAS (distributed antenna systems) or small cell systems and states that, "the planning commission may, during the preliminary review of the application, determine other permit streamlining actions that would be appropriate in light of the specific characteristics of the proposal (PVMC Section 18.41.050.A). Staff recommends that the Planning Commission convene a subcommittee consisting of the Public Works Director, Planning Director, and one ASCC, Trails and Conservation Committee member each. This subcommittee would review the project and offer its comments to the Planning Commission, which would then complete its review and vote on the project at a subsequent meeting.

Public Comments

No public comments have been received as of the writing of this report.

ENVIRONMENTAL REVIEW

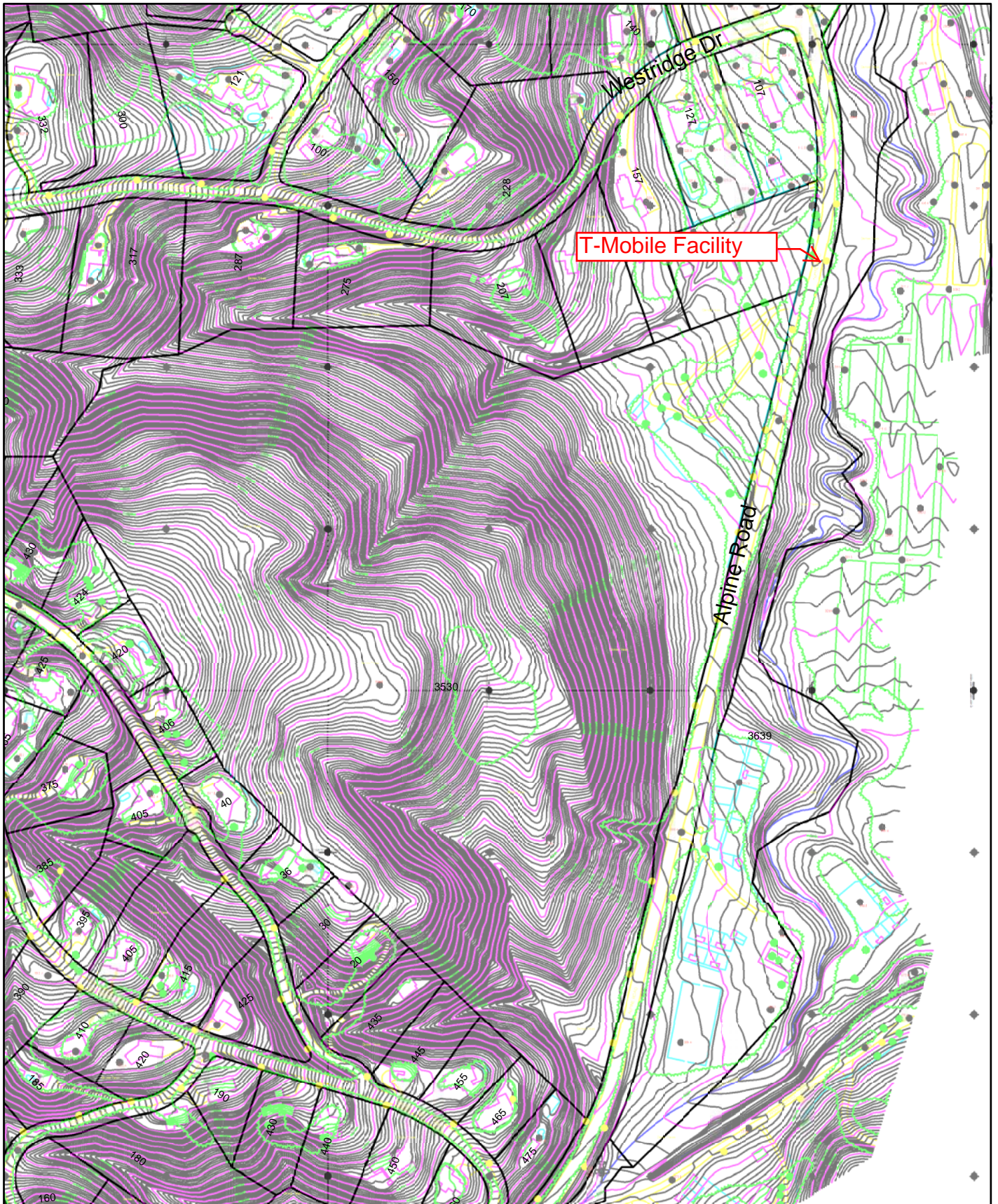
The project is categorically exempt as not having potential for a significant effect on the environment under Section 15303 of the California Environmental Quality Act (CEQA) Guidelines. Specifically, the section exempts new construction of small structures.

ATTACHMENTS

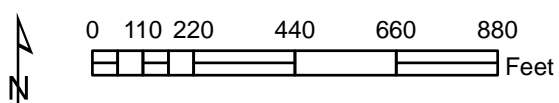
1. Vicinity Map
2. Resolution No. 1999-385, adopted February 17, 1999
3. Staff Report to the Planning Commission, dated January 11, 2006
4. Photographic Simulation, received April 26, 2017
5. L21 Predicted Coverage map, received April 26, 2017
6. Radio Frequency Electromagnetic Fields Exposure Report, received April 26, 2017
7. Project plans, received August 25, 2017 (Planning Commission only)

Report approved by: Debbie Pedro, Planning Director





Vicinity Map



"3530 Alpine Rd"

September 2017

RESOLUTION NO. 1999-385

RESOLUTION OF THE PLANNING COMMISSION OF THE
TOWN OF PORTOLA VALLEY RECOMMENDING APPROVAL OF
CONDITIONAL USE PERMIT X7D-146 RELATED TO THE PACIFIC BELL
MOBILE WIRELESS COMMUNICATION FACILITIES

WHEREAS, an application has been submitted for Conditional Use Permit (X7D-146) for installation of three new micro-cell sites for wireless communication in the Town of Portola Valley;

WHEREAS, the project is categorically exempt from filing an environmental impact report pursuant to Article 14, Section 15301 of the State's CEQA guidelines; and

WHEREAS, on February 17, 1999, the Planning Commission did hold a duly noticed public hearing to consider the proposed Conditional Use Permit; and

WHEREAS, the Planning Commission considered evidence set out in the February 2, 1999 Staff Report and heard at the public hearings;

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the Town hereby approves the Conditional Use Permit subject to conditions contained in Exhibit "A" based on the following findings:

1. The proposed facilities are properly located in relation to the community as a whole and to land use and transportation and services facilities in the vicinity. The three locations along major roads will provide service to motorists plus a significant band of residences along the roads.
2. The site for the proposed uses are adequate in size and shape to accommodate the proposed use and all yards, open spaces, walls and fences, parking, loading, landscaping and such other features as may be required by zoning ordinance or in the opinion of the commission be needed to assure that the proposed uses will be reasonably compatible with land uses normally permitted in the surrounding area and will insure the privacy and rural outlook of neighboring residences. The sites are adequate since the facilities are small additions to existing utility poles.

3. The site for the proposed uses will be served by streets and highways of adequate width and pavement type to carry the quantity and kind of traffic generated by the proposed uses. The streets provide access to the poles for maintenance
4. The proposed uses will not adversely affect the abutting property or the permitted use thereof. The visual impacts affect only those persons using Alpine and Portola Roads. It does not appear that there are negative visual impacts on adjoining residential properties.
5. The sites for the proposed uses are demonstrated to be reasonably safe from or can be made reasonably safe from hazards of storm water runoff, soil erosion, earth movement, earthquake and other geologic hazards. "Natural hazards" do not appear to present any problems at the sites.
6. The proposed uses will be in harmony with the general purpose and intent of the zoning ordinance and the general plan. The general plan puts particular emphasis on undergrounding along Alpine and Portola Roads. The micro cells cannot operate underground and to ensure that the cells are removed from Alpine Road and Portola Road Corridors, PBMS shall make a complete study of the town to determine all sites that would be needed to provide complete coverage. As part of that study sites shall be sought for relocating the three micro cells.
7. The proposed uses shall serve primarily the town and its spheres of influence. The proposed micro cells would serve only the town and portions of its spheres of influence areas.

PASSED AND ADOPTED at the regular meeting of the Planning Commission of the Town held on February 17, 1999.

By: 
Chairman, Planning Commission

ATTEST:


Leslie A. Lambert
Planning Coordinator



MEMORANDUM

TOWN OF PORTOLA VALLEY

TO: Planning Commission

FROM: Leslie Lambert, Planning Manager

DATE: January 11, 2006

SUBJECT: Amendment to Conditional Use Permit X7D-146, Joint Pole Association, T-Mobile, Town Right-of-Way across from 3530 Alpine Road

Request and Background

This is a request for amendment to conditional use permit X7D-146, to allow for the installation and operation of antennas and associated equipment for the T-Mobile wireless services network located within the Town's right-of-way across the street from Alpine Rock Ranch at 3530 Alpine Road. The proposal includes installation of one new antenna, mounted between two existing Pacific Bell antennas and one new microcell cabinet and associated equipment for Omnipoint communications a subsidiary of T-Mobile on an existing wood joint pole. The proposed antenna installation is shown on the enclosed five-sheet plan set dated 12/19/05 provided by T-Mobile and photo simulations providing views looking south from Alpine Road.

The proposed project includes one new antenna that measure 55" tall x 7" wide x 4" deep to be mounted as described above; and one microcell that measure 21.1" tall x 16.2" wide x 7.9" deep, which is proposed to be located at the rear of the existing utility pole. The new microcell would be mounted just above the existing microcell unit and would be of a similar size and appearance. In addition to these changes, the plans also call for replacing the existing 20A power box with a 50A box. The new box would be located in the same place as the existing box and look the same as the existing box. Overall, because of the appearance of the existing improvements on the pole, the proposed additions would present very little visual change to existing conditions.

Due to the location along the scenic corridor, and to further minimize the changes that would occur with the project, it is requested that the antenna be as narrow and flush mounted as feasible, and all existing and proposed equipment be, as possible, painted brown to match the existing pole. Staff has discussed these requirements with Mr. Aaron Estes, Representative for T-Mobile, and he understands the concerns over the scenic corridor and agrees to these requirements.

In addition, a condition is recommended and has been agreed to by the applicant by the applicant, that the permit be amended to allow permit approval for a maximum of five years and prior to the expiration, the applicant either remove the equipment or file for an application for permit extension that includes an evaluation of the changing wireless technologies. The Town Attorney has advised that the encroachment permit requirements and conditions that are placed upon the utilities within the right-of-way establish the necessary assurances to guarantee that once equipment becomes obsolete or is no longer used, it shall be removed from the poles in a timely manner. The applicant stated T-Mobile would be willing to have the permit conditioned to require removal of the equipment if existing facilities are placed underground.

As proposed with the recent Cingular approval on Alpine Road it was suggested that a condition be added that if the town had the authority to collect fees or rent for the facilities within the right-of-way, the applicant would be responsible for payment. The Town Attorney has advised that the Town does not have the authority to collect fees or rent for facilities within the Town's right-of-way.

There are numerous other locations within the right-of-way with similar conditions and visibility within the corridors of both Alpine and Portola Roads. The Planning Commission granted similar conditional use permits to Pacific Bell Wireless (now T-Mobile) in 1999 allowing two antennas facilities along Alpine Road (this site) and one along Portola Road, and most recently to AT&T Wireless (now Cingular) within the right-of-way adjacent to 945 Portola Road, Cingular Wireless within the right of way near Creek Park Drive and an additional antenna for Verizon at the Woodside Priory. A pole that has similar wireless equipment is located on the north side of Portola Road immediately across the street from the temporary Town Hall building. Measures to help mitigate the impact can include painting the equipment and antenna panels

Previously approved wireless telecommunication facilities located at the Woodside Priory include the following: GTE Mobilnet – *now Verizon* (conditional use permit X7D-132 established in 1990); Cellular One/Bay Area Cellular (conditional use permit X7D-138 established in 1993); Pacific Bell Mobile Services (conditional use permit established in 1996); Sprint PCS (conditional use permit X7D-147 established in 1999); and Nextel Communications (conditional use permit X7D-152 established in 2000).

The Planning Commission conducted a preliminary review on November 2, 2005, and found no particular concerns with the physical aspects of the proposal. The main commission issues had to do with the acquisition by T-Mobile of the existing pole mounted Pacific Bell facilities and how the existing Pacific Bell use permit, including time frames for the permit, relate to the current plans. T-Mobile has provided documentation relative to the merger with Pacific Bell, therefore, the request from T-Mobile, is to amend the existing conditional use permit previously issued to Pacific Bell in 1999. Staff has reviewed the conditions from the 1999 approval, and has revised them for compliance with recent wireless approvals, including time line for removal of equipment and permit approval time period of five years.

The ASCC conducted review of the proposal at their regular meeting on November 14, 2005, and recommended planning commission approval of the project as presented subject to the existing and proposed equipment being painted in a brown color matching, as possible, the color of the existing joint pole. The action by the ASCC was taken with the understanding that the standard conditions relative to removal of the equipment should be part of any use permit approval action.

Ordinance Requirements

Section 18.36.020 of the Municipal Code allows wireless communication facilities in all zoning districts as conditional uses. Above ground installations are permitted when stipulated in a conditional use permit approved by the Planning Commission. As part of the conditional use permit application process, the Planning Commission may require the applicant to submit sufficient information in order for the Commission to make the required findings set forth in Section 18.72.130 (see below). In addition, Municipal Code Section 18.72.140 allows the Planning Commission to set conditions of approval.

The Town of Portola Valley adopted Ordinance No. 1997-293 relating to Wireless Communication Facilities on March 12, 1997 and the Town Council established a Policy Statement Regarding Wireless Communication Facilities on February 26, 1997. Ordinance and Policy Statement are enclosed.

The Telecommunications Act of 1996 (still in effect) limits local review of applications for installations of wireless facilities including cellular and PCS systems. While local zoning authority is preserved, there are significant limitations. In a previous staff report prepared by George Mader, Town Planner, to the Planning Commission dated 12/12/96, background was provided with respect to the amount of discretion the Town has on acting on applications for cellular facilities. That background information follows:

The staff report describes the FCC limitations on local regulation of wireless telecommunication industry. As the report points out, while local zoning authority is preserved, there are significant limits as to the exercise of that authority. In particular, the Town cannot establish a limit on the number of local PCS operators that can exist in the Town. However, the Town can take significant steps to control the aesthetic/visual impacts of the facilities as long as those steps don't result in making it impossible for the company to provide service to the area. Further, part of the FCC licensing process includes a mandate that within five years, the local company shall service 37.5% of its regional area, and 75% of the regional area within ten years.

Staff has investigated how many new antenna structures the Town may expect to accommodate. According to the FCC there are over 40 million mobile/portable cellular units and over 22,000 cell sites operating in the United States. The FCC notes it is difficult to predict the ultimate number of personal wireless service providers in a community. However, they expect approximately eight cellular and PCS license to seek antenna facilities in each community.

Section 18.36.020 of the Zoning Ordinance permits major operating facilities of public utilities in all zoning districts subject to granting of a conditional use permit. In order to grant a conditional use permit, the Planning Commission must make the findings in support of the following requirements of Section 18.72.130 (zoning) of the Municipal Code.

1. The proposed use or facility is properly located in relation to the community as a whole and to land uses and transportation and services facilities in the vicinity.
2. The site for the proposed use is adequate in size and shape to accommodate the proposed use and all yards, open spaces, walls and fences, parking, loading, and landscaping and such other features as may be required by this title or in the opinion of the commission be needed to assure that the proposed use will be reasonably compatible with land uses normally permitted in the surrounding area and will insure the privacy and rural outlook of neighboring residences.
3. The site for the proposed use will be served by streets and highways of adequate width and pavement type to carry the quantity and kind of traffic generated by the proposed use.
4. The proposed use will not adversely affect the abutting property or the permitted use thereof.
5. The site for the proposed use is demonstrated to be reasonably safe from or can be made reasonably safe from hazards of storm water runoff, soil erosion, earth movement, earthquake and other geologic hazards.
6. The proposed use will be in harmony with the general purpose and intent of this title and the general plan.
7. When this title or the town general plan specifies that a proposed use shall serve primarily the town and its spheres of influence, the applicant shall have demonstrated that a majority of business of the proposed use will come from the area immediately or within a reasonable period of time. In making such a demonstration, all similar uses in the town and its sphere of influence shall explicitly be taken into consideration by the applicant.
8. For wireless communication facilities, that the proposed site location and facility designs have the least adverse impact when compared with other feasible alternatives.

Review and Evaluation with Respect to Zoning Ordinance Requirements

The following comments are offered to assist the Commission in evaluating the request in terms of compliance with the provisions of Municipal Code Section 18.72.130:

1. Proper Community Location. The location of the joint pole along Alpine Road will provide service to motorists and a significant number of residents as shown on the attached coverage

area map received 9/22/05. Locating the antenna on poles along major roads, however, might be viewed as being inconsistent with Town policy to gradually underground lines along

the roads. Were overhead lines to be put underground at a later date, alternatives would have to be pursued for the wireless cells.

A possible alternative to the proposed location would be to locate the new improvements on poles that are not along major roads, but this would not ensure that cell sites along major roadways would still be needed.

2. Adequate Site. The site appears adequate since the pole exists, and the location has been selected to improve local cell service. Further, with this proposal, coverage can be improved without the need to increase the height of the existing pole or make any other significant changes to it.
3. Adequate Local Streets. The streets provide access to the poles for maintenance. Otherwise, it appears, there would be no conflict with local street use.
4. Impact on Abutting Property. The major impacts appear to be visual affecting those persons using Alpine Road. It does not appear that there are negative visual impacts from surrounding properties. Also, the applicant has provided the enclosed July 6, 2005 radio frequency (RF) exposure analysis that concludes the facility would be within the "prevailing" FCC standards for limiting human exposure to RF energy and that the proposal would not cause environmental concerns.
5. Safety from Natural Hazards. "Natural hazards" do not appear to present any problems at the site.
6. Conformance with the Zoning Ordinance and General Plan.
 - a. Section 2161 of the Land Use Element of the General Plan, provides, in part, for the Portola Road corridor: "Overhead utility lines should be converted to underground installations."
 - b. Section 2164,2. provides: "A program should be developed for progressively placing overhead lines underground."
 - c. Section 18.36.020 of the zoning ordinance permits wireless communication facilities that serve primarily the town and its spheres of influence as conditional uses.

The General Plan provides that all utilities lines along Alpine and Portola Roads should be underground over some period of time. The plan also provides for undergrounding throughout the Town. These provisions raise the question of priorities for undergrounding. The limited funds the Town has collected for undergrounding have been used along a section of Alpine Road near Westridge Drive, along Portola Road near the MROSD parking lot, and part of the lower section of Westridge Drive near Alpine Road. The later undergrounding related to increasing traffic safety with respect to a pole located at a sharp curve.

The General Plan puts particular emphasis on undergrounding along Alpine and Portola Roads. The actions of the Town in actual undergrounding is consistent with this emphasis. It might be considered inconsistent with the General Plan to allow new facilities on the overhead system if they tended to perpetuate the overhead lines along these roads.

At the same time, it is somewhat difficult to provide wireless service to the local areas due to topography, trees and other conditions without overhead facilities. Until use of GPM and other technologies are more widespread it appears reasonable to allow for carefully conditioned antenna improvements like the proposed installation. A condition of the encroachment permit and conditional use permit should, for example, be imposed to require removal of equipment at the time utility lines are actually placed underground or as use of alternative technologies become more wide spread and eliminate the need for the pole mounted antenna systems. As noted above, the applicant is agreeable to such conditions.

7. Services to the Town and its Spheres of Influence. The proposed joint pole antenna would serve only the Town and portions of its spheres of influence areas.
8. The proposed site location and design is compatible with other facilities along the Alpine Road Scenic Corridor and will have a minimal impact when viewed from off site.

Proposed Conditions

1. The amended permit is issued to T-Mobile and any transfer shall require amendment to the permit. Northern California Joint Association and T-Mobile is allowed the installation and operation of antennas and associated equipment for the T-Mobile wireless services network as shown on the eight-sheet plan set dated 12/19/05.
2. The new and existing antennas and equipment color shall be painted similar to the existing utility pole
3. Construction activities shall be in compliance with the Town's Noise Control Ordinance and shall be limited to the hours of 8:a.m. to 5:30 p.m. Monday through Friday, and not on Holidays and Weekends.
4. The following provisions contained in the Policy Statement Regarding Wireless Communication Facilities adopted February 28, 1997 shall be complied with:
 - a. The permit holder and the permit holder's successors-in-interest shall properly maintain the exterior appearance of the facility and shall remove the facility within ninety-days, should use of the facility be discontinued by the carrier.
 - b. The permit shall be granted for an initial period not to exceed five years. Renewal of the permit must be requested by the applicant no less than ninety days before the permit expires. At the time of renewal, the planning commission may grant a permit for any period of time deemed appropriate, considering the rate of change in the industry and other appropriate factors.
 - c. Within six months after installation of the facility, the applicant shall submit report stamped by a licensed electrical engineer that provides cumulative field measurements of electromagnetic radiation at the site. This report shall quantify this radiation and compare it with the maximum standards accepted by the Federal Communication Commission. If emissions from the project exceed these standards, the report shall set forth a plan for bringing it into compliance within the shortest time possible. This plan shall be submitted to the approval of the town planner, if the project does not comply within the accepted time frame or the town planning staff does not accept the compliance plan, the town may take steps to revoke or modify this conditional use permit.
 - d. As new technology becomes available, the applicant shall upgrade the facility to the satisfaction of the town planner as feasible to minimize impacts upon the community, including aesthetic impacts. If the facility is not upgraded within a reasonable amount of time, the town may take steps to revoke or modify the conditional use permit. If the facilities are modified and technology allows the removal of the equipment, T-Mobile will be required to remove the equipment to the satisfaction of the public works director. If the overhead lines are placed underground, the applicant shall be required to replace or relocate the utilities subject to review and approval by the town planner and public works director.
 - e. If the holder of a conditional use permit intends to make physical changes to the approved facilities, such changes shall be submitted to the town planner for review. If the town planner finds the changes to be of a minor nature and consistent with the general provisions of the permit, he may approve them. If he considers the changes

to be more significant, but not of a magnitude to require a conditional use permit amendment, he may refer them to the planning commission for review. If the planning

commission determines the changes are consistent with the general provisions of the permit, it may approve the changes. Such determination is to ensure reasonable compliance with the terms of the permit and does not require a public hearing.

- f. All components of the wireless community facility shall be as narrow and flush mounted to the pole as feasible to the satisfaction of the planning staff.
- g. Wireless communication facilities shall be designed to survive a natural disaster without interruption to service. To this end, the applicant shall submit a report stamped by a licensed structural engineer stating that the facility is designed to withstand the forces expected during the "maximum credible earthquake".
- h. The design of the facility shall include adequate security to prevent unauthorized access of vandalism.
- i. The permittee shall defend, indemnify and hold harmless the town, its agents, officers and employees from any claim, action or proceeding related to the town's approval of the permit.

Review and Analysis with Respect to Policy Statement

The Town Council adopted "Policy Statement Regarding Wireless Communication Facilities" on February 26, 1997, a copy of which is enclosed. The applicant has submitted the "Application Information" as required by Section 3 of the policy and that information is enclosed.

Environmental Impact

The project is categorically exempt from filing an environmental impact report pursuant to Section 15303 of the Town's CEQA guidelines. This section exempts new construction of small structures.

Recommendations for Actions

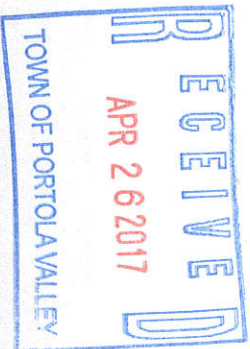
Unless information presented at the public hearing leads to other determinations, the following actions are recommended:

1. Environmental Impact. Move to find the project categorically exempt pursuant to Section 15303 of the Town's CEQA guidelines.
2. CUP Request. Move to make the findings required by Section 18.72.130 (zoning) of the Municipal Code and approve the conditional use permit amendment X7D-146 request subject to the above conditions.

Enclosures:

Original approval of CUP X7D-146, Resolution No. 1999-395
1/6/05 Letter from T-Mobile (received 1/11/06)
8-Sheet Plan Set prepared by T-Mobile dated revised 12/19/05
Photo simulations of views looking south from Alpine Road
Coverage Map, with 9/20/05 transmittal letter from Aaron D. Estes
RF Exposure Analysis dated July 6, 2005, prepared by Hammett & Edison, Inc.
Minutes from the November 2, 2005 Planning Commission meeting
Minutes from the November 14, 2005 ASCC meeting
Wireless Communications Facilities Ordinance No. 1997-295
Policy Statement Regarding Wireless Communication Facilities

cc: Town Council Liaison
Town Administrator
Town Attorney



PHOTOGRAPHIC SIMULATION PROPOSED MODIFICATION OF WIRELESS COMMUNICATIONS FACILITY



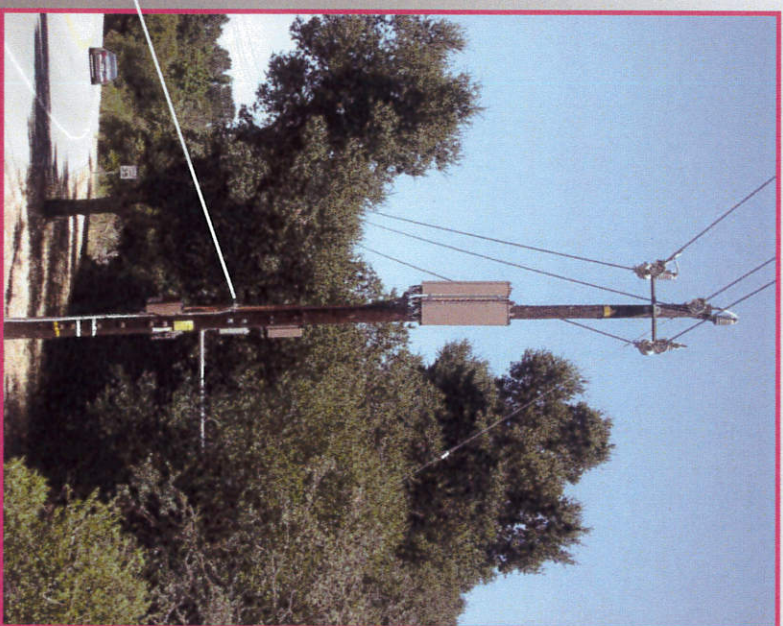
The included Photographic Simulation(s) are intended as visual representations only and should not be used for construction purposes. The materials represented within the included Photographic Simulation(s) are subject to change.

SITE NUMBER:	SF03639A
SITE NAME:	ALPINE&WESTRIDGE JP
SITE ADDRESS:	3530 ALPINE ROAD PORTOLA VALLEY, CA 94028
DATE:	04/19/17
APPLICANT:	T-MOBILE
CONTACT:	MAGED HENEIN BLACK & VEATCH (913) 458-7556



EXISTING CONDITIONS

**PROPOSED RBS
EQUIPMENT INSTALLED
INSIDE EXISTING RBS
CABINET SHROUD**

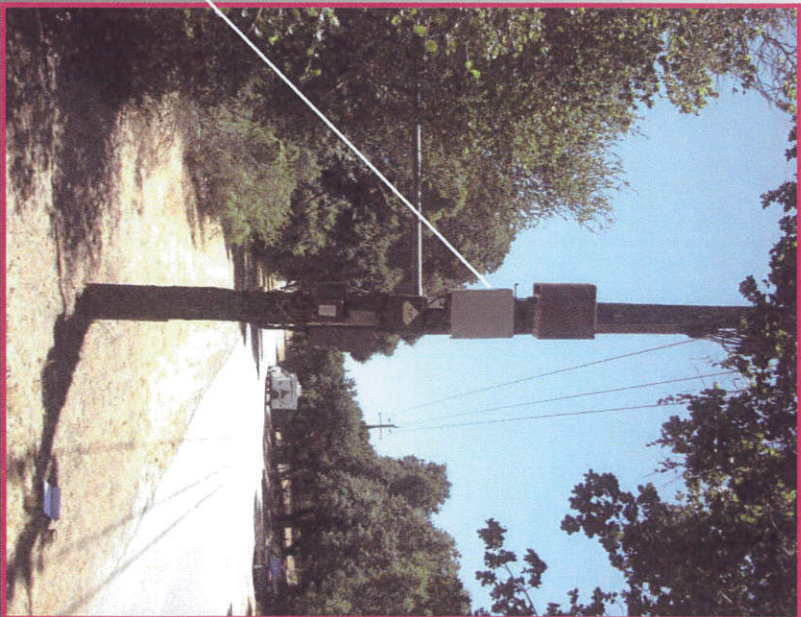


PHOTOGRAPHIC SIMULATION



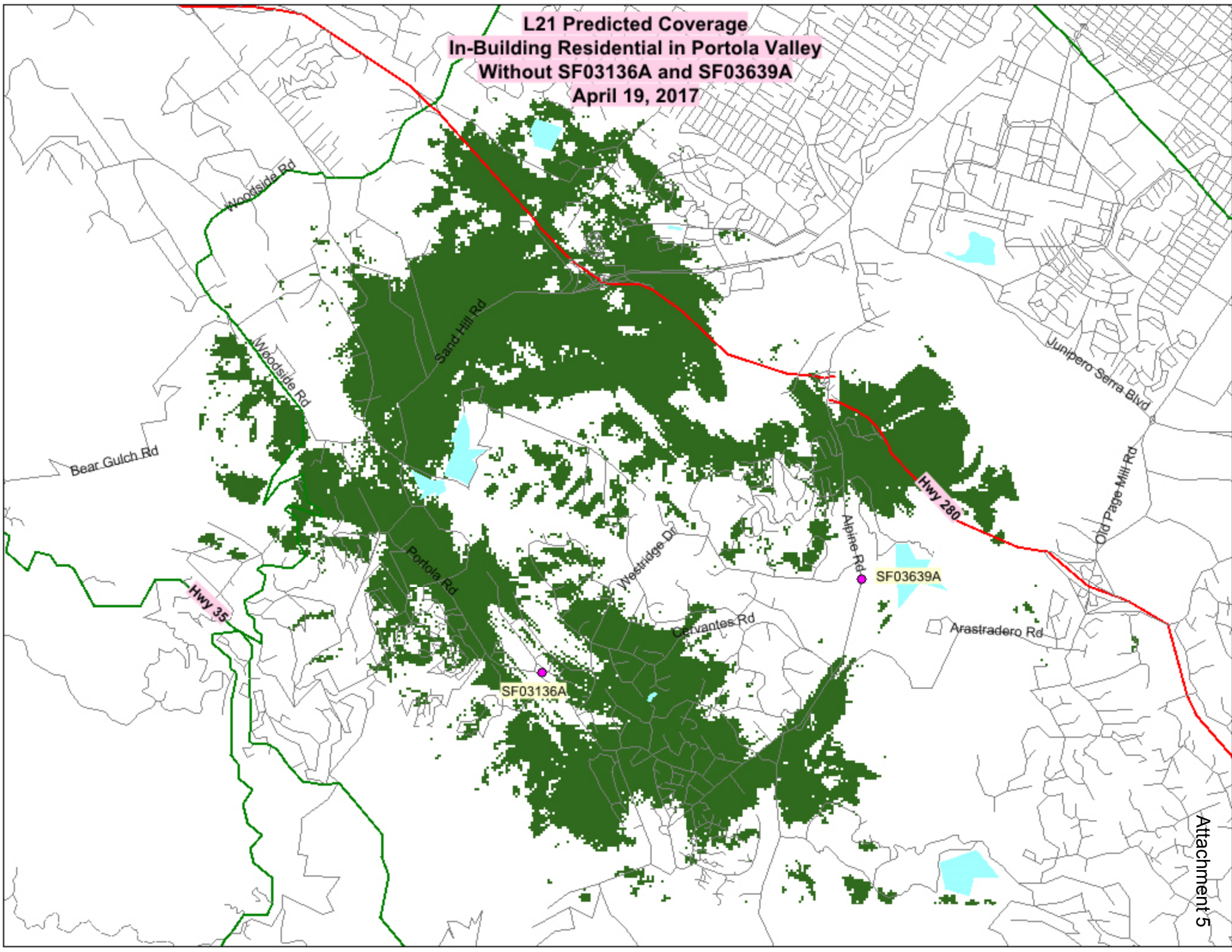
EXISTING CONDITIONS

PROPOSED RBS
EQUIPMENT INSTALLED
INSIDE EXISTING RBS
CABINET SHROUD

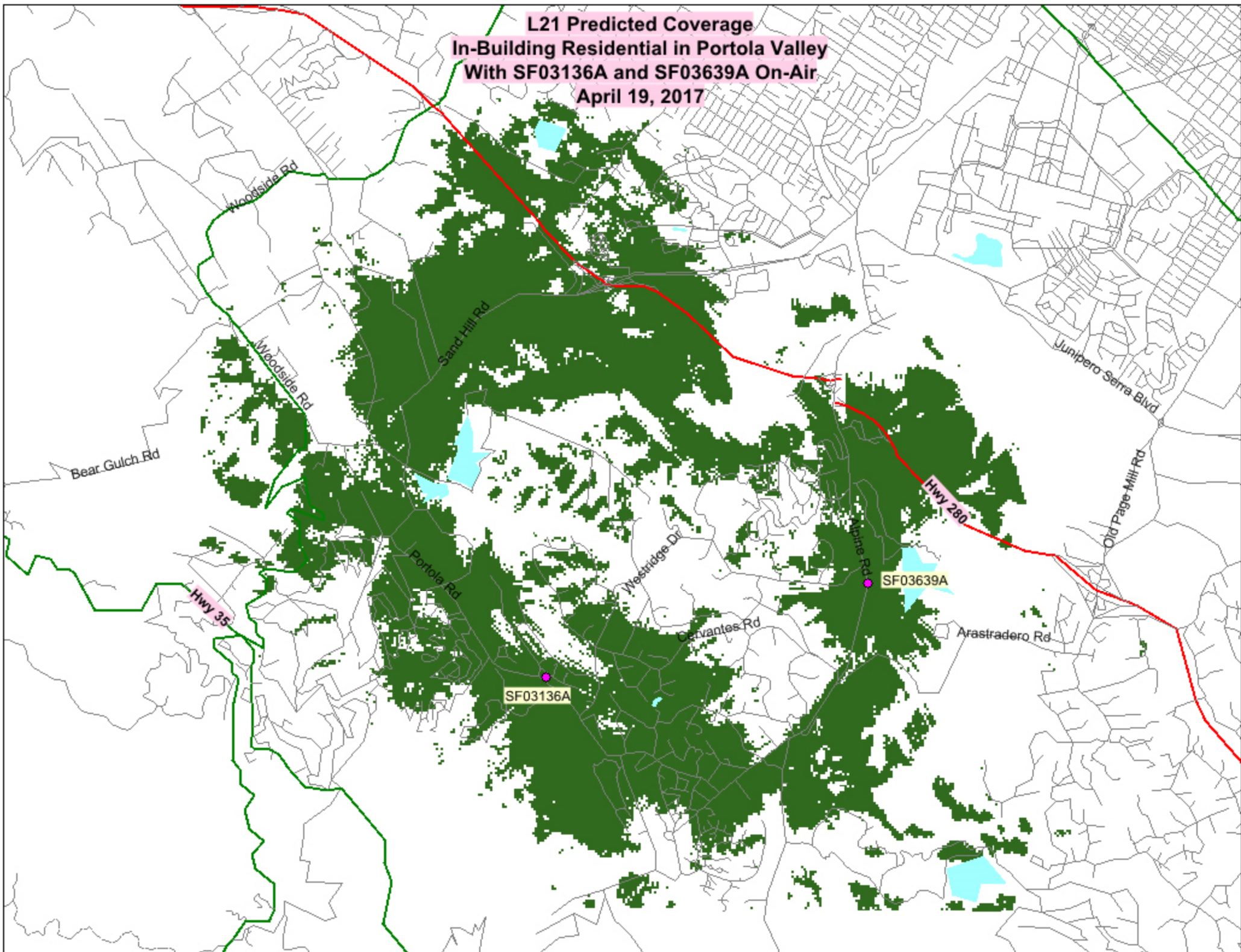


PHOTOGRAPHIC SIMULATION

**L21 Predicted Coverage
In-Building Residential in Portola Valley
Without SF03136A and SF03639A
April 19, 2017**



**L21 Predicted Coverage
In-Building Residential in Portola Valley
With SF03136A and SF03639A On-Air
April 19, 2017**

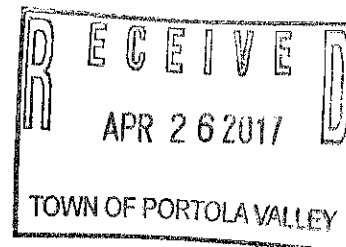




YOUR RF SAFETY PARTNER

RADIO FREQUENCY ELECTROMAGNETIC FIELDS EXPOSURE REPORT

Prepared for T-Mobile



Site Name: Alpine & Westridge JP
Site ID: SF03639A
Site Type: Utility Pole

Located at:

3530 Alpine Road
Portola Valley, CA 94028
Latitude: 37.3911 / Longitude: -122.1906

Report Date: 9/14/2016
Report By: Jamie Santos

Based on FCC Rules and Regulations, T-Mobile will be compliant provided recommendation(s) are implemented.

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1.0 EXECUTIVE SUMMARY

Dtech Communications, LLC (“Dtech”) has been retained by T-Mobile to determine whether its wireless communications facility complies with the Federal Communications Commission (“FCC”) Radio Frequency (“RF”) Safety Guidelines. This report contains a computer-simulated analysis of the Electromagnetic Fields (“EMF”) exposure resulting from the facility. The analysis also includes assessment of existing wireless carriers on site, where information is provided. The table below summarizes the result at a glance:

Table 1: EMF Summary

T-Mobile	Summary
Access Type	Walk-Up
Access to antennas locked	NA
RF Sign(s) @ access point(s)	NOC, Guidelines & Caution (Recommended @ Base of Pole)
RF Sign(s) @ antennas	None
Barrier(s) @ sectors	NA
Max EMF level for T-Mobile on Ground	19.9% General Population
Min Clearance Distance from Face of T-Mobile’s Antennas	13 Feet

2.0 SITE DESCRIPTION

The wireless telecommunication facility is located on the ground. The facility consists of 1 wireless carrier(s) or operator(s): T-Mobile. The antennas are typically grouped into sectors pointing in different direction to achieve the desired areas of coverage. T-Mobile's antennas are mounted on a wooden utility pole and connected to the equipment via cables.

2.1 Site Map



2.2 Antenna Inventory

Technical specifications in the table below are provided by our clients or gathered from physical field surveys where applicable and/or possible. Conservative estimates are used where information is not provided or available.

Table 2: Site Technical Specifications

Antenna ID	Operator	Antenna Mfg	Antenna Model	Type	Frequency (MHz)	Orientation (°T)	Horizontal BWidth (°)	Antenna Aperture (ft)	Antenna Gain (dBd)	UMTS Radios	LTE Radios	Total ERP (Watts)	Bottom Tip Height Above Ground (Z) (ft)	Bottom Tip Height at Ant. Level (Z) (ft)
A1	T-Mobile	RFS	APXV18-206516S-A20	Panel	1900	350	65	4.4	16.3	2		1702	21.8	0.0
A1	T-Mobile	RFS	APXV18-206516S-A20	Panel	2100	350	65	4.4	16.3		2	3396	21.8	0.0
B1	T-Mobile	RFS	APXV18-206516S-A20	Panel	1900	190	65	4.4	16.3	2		1702	21.8	0.0
B1	T-Mobile	RFS	APXV18-206516S-A20	Panel	2100	190	65	4.4	16.3		2	3396	21.8	0.0
B2	T-Mobile	Andrew	932DG65T2E-M	Panel	1900	280	65	4.3	15.9	2		1552	21.9	0.0
B2	T-Mobile	Andrew	932DG65T2E-M	Panel	2100	280	65	4.3	15.9		2	3098	21.9	0.0

3.0 ANALYSIS

3.1 Emission Predictions

Figure 1: Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits. Gray represents areas where exposure levels are calculated to be at or below 5%; Green - between 5% & 100% (below MPE limits); blue, yellow & red - greater than 100% (exceeds MPE limits).

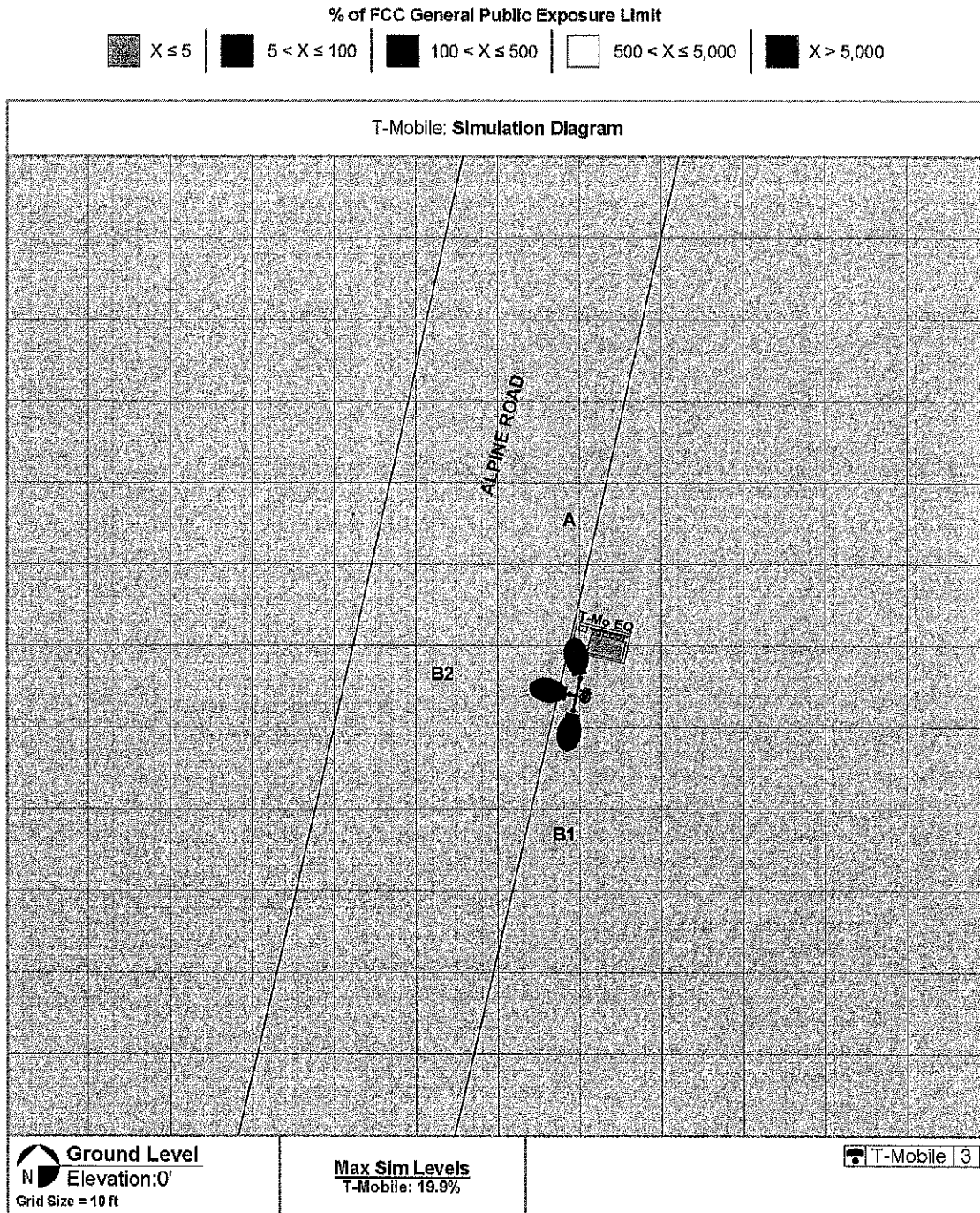
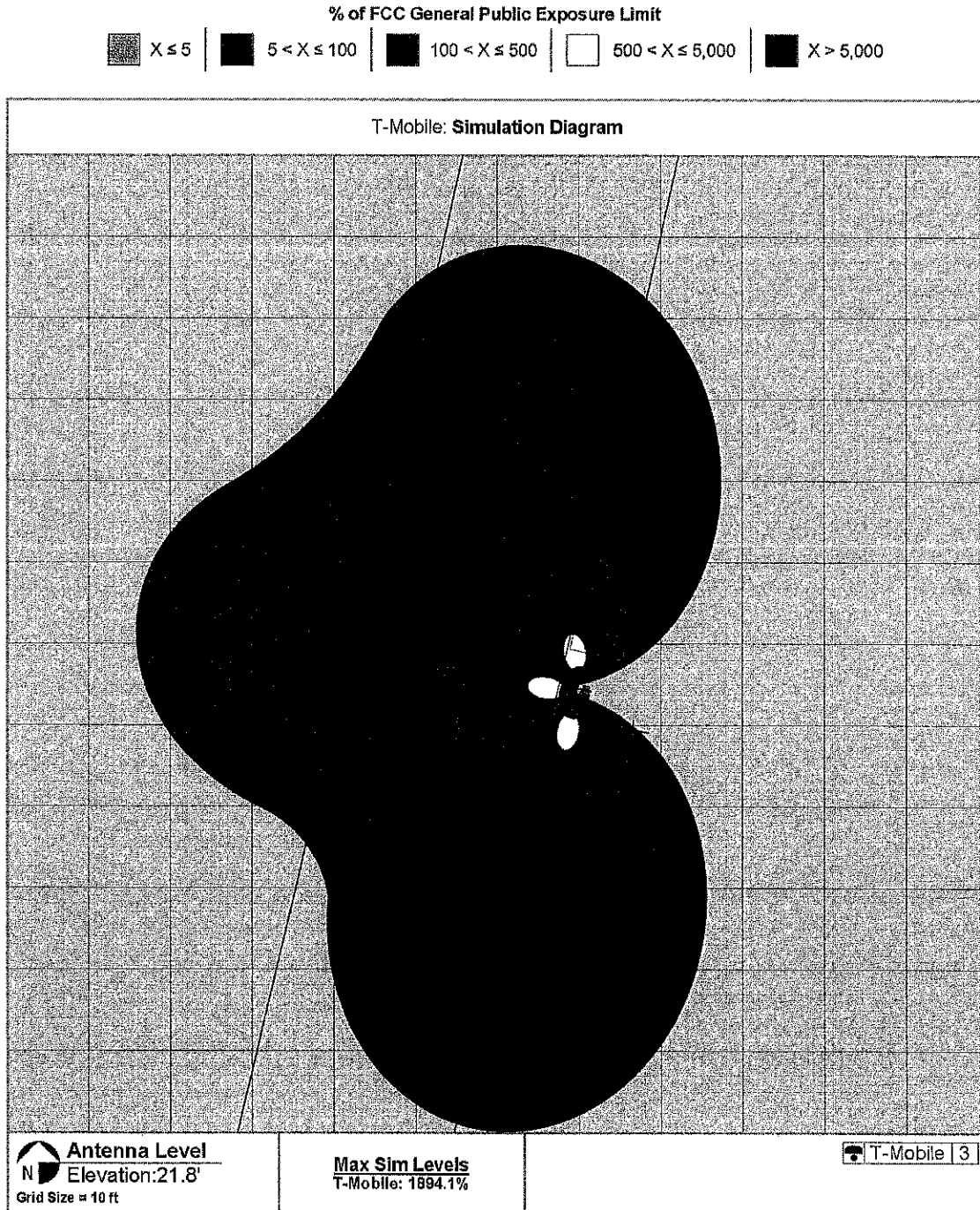


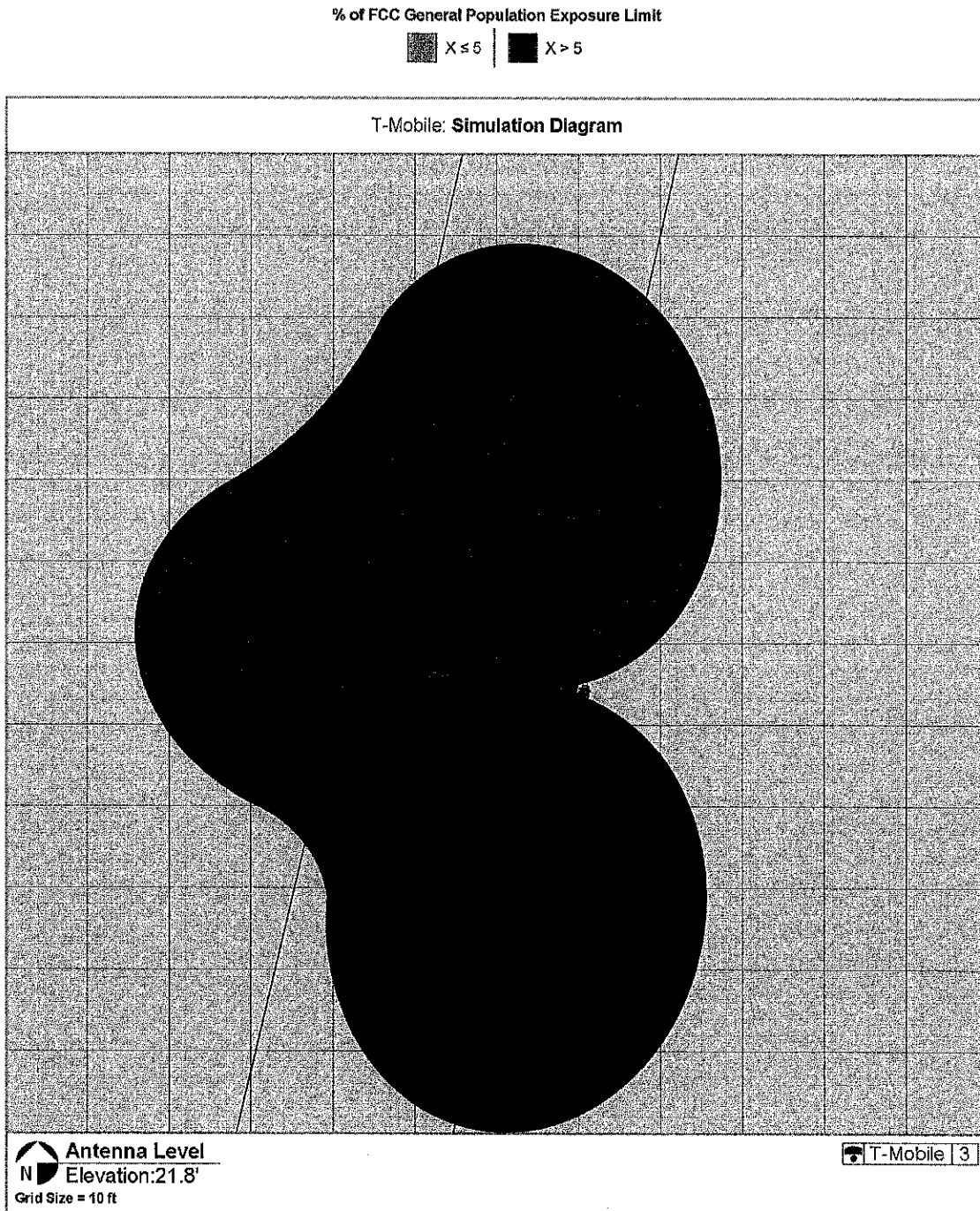
Figure 2: Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits. Gray represents areas where exposure levels are calculated to be at or below 5%; Green- between 5% & 100% (below MPE limits); blue, yellow & red – greater than 100% (exceeds MPE limits).



3.2 Five Percent Contributions

Mitigation measures are a shared responsibility for carriers whose RF emission levels exceed five percent of the FCC's exposure limits in areas of non-compliance.

Figure 3: Plan (bird's eye) view map of results compared to FCC's General Population MPE (Maximum Permissible Exposure) Limits. Gray represents areas where exposure levels are calculated to be at or below 5%; Green – greater than 5%.



4.0 CONCLUSION

4.1 Results

For a person standing on the ground, calculations for T-Mobile's site resulted in exposure levels below the FCC's most stringent General Population MPE Limits (see figure 1).

At antenna elevation, the highest calculated exposure level is above the FCC's General Population MPE Limits near the T-Mobile antenna(s) (see figure 2). The overexposed (yellow and blue) areas extend 13-feet from the front face of the T-Mobile antenna(s). From the provided drawings, there are no other buildings or surrounding structures within 13-feet of the T-Mobile antenna(s). Beyond 13-feet, exposure levels are predicted to be below the FCC's most stringent General Population MPE Limits.

The antennas are mounted on a tall tower and therefore not accessible by the general public. It is presumed that T-Mobile employees and contractors are aware of the transmitting antennas and will take appropriate precautions when working near them. However, there may be situations where workers i.e. utility pole and city personnel etc. may find themselves directly in front of the antennas. Individuals entering the site or working near/in front of antennas must receive appropriate RF safety training¹ and be made aware of the HotZones (areas where RF exposure may potentially exceed FCC safety limits). In addition, contact information should be made available in the event work is required within the HotZones.

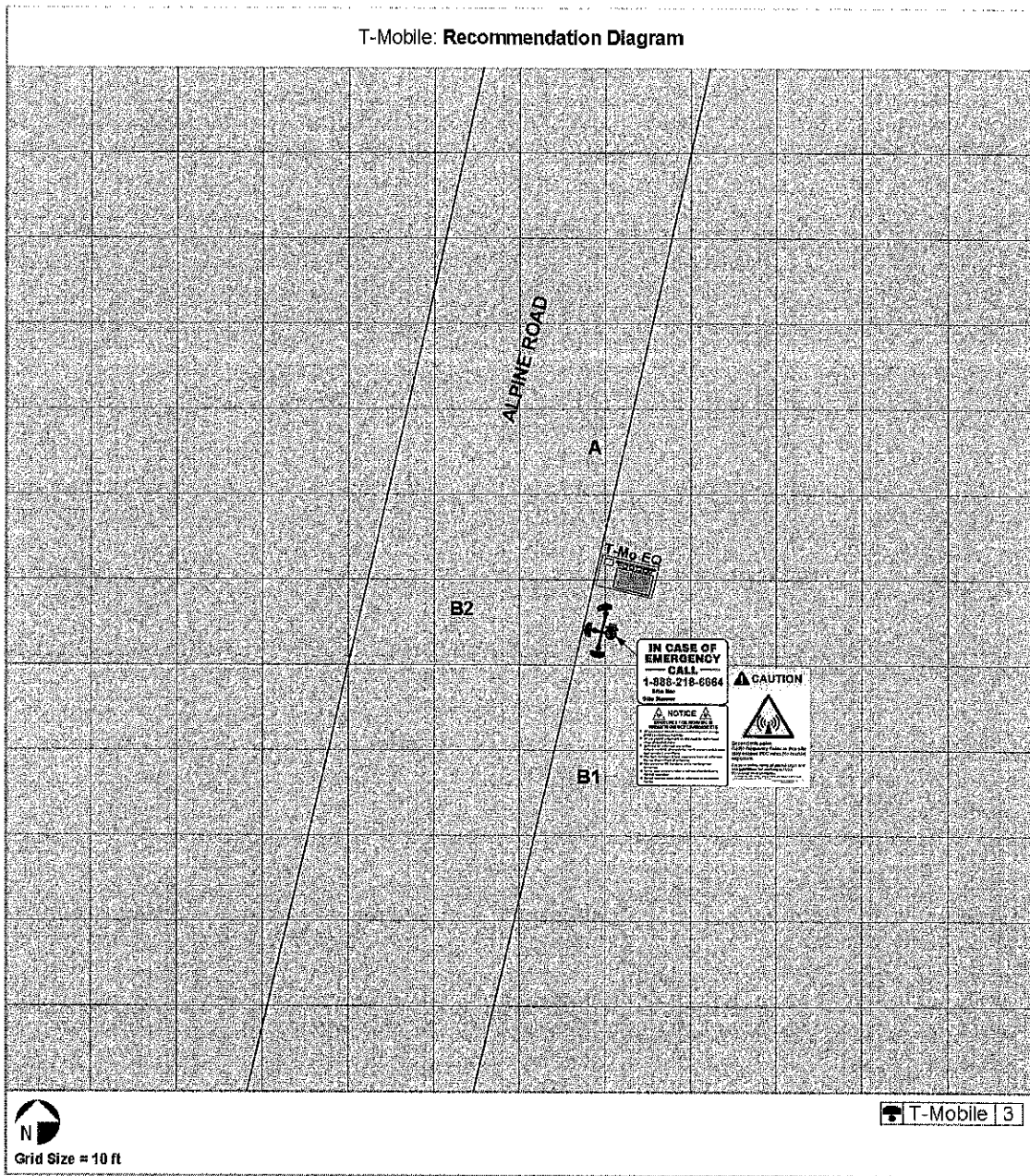
4.2 Recommendation(s)

For the facility to be classified as an Occupational/Controlled environment, the following action(s) are recommended in accordance with the FCC's RF Safety Guidelines (see figure 4):

- 1) Install NOC, GUIDELINES and CAUTION Sign(s) at each tower climbing access point or base of the tower, where they will be clearly visible to tower climbers.

¹ Dtech Communications' RF Safety training program - AntennaView.com[®]

Figure 4: Recommendation(s)



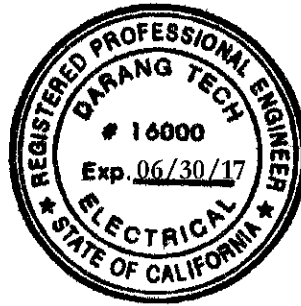
4.3 Statement of Compliance

Based on the above results, analysis and recommendation(s), it is the undersigned's professional opinion that T-Mobile's site will be compliant with the FCC's RF Safety Guidelines provided recommendation(s) are implemented.

4.4 Engineer Certification

This report has been prepared by or under the direction of the following Registered Professional Engineer: Darang Tech, holding California registration number 16000. I have reviewed this report and believe it to be both true and accurate to the best of my knowledge.


Darang Tech, P.E.



Appendix A: Background

Dtech uses the FCC's guidelines described in detail in Office of Engineering & Technology, Bulletin No. 65 ("OET-65") "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields". The table below summarizes the current Maximum Permissible Exposure ("MPE") safety limits classified into two groups: General population and Occupational.

Table 3: FCC MPE Limits (from OET-65)

Frequency (Mhz)	General Population/ Uncontrolled MPE (mW/cm ²)	Averaging Time (minutes)	Occupational/ Controlled MPE (mW/cm ²)	Averaging Time (minutes)
30 - 300	0.2	30	1.0	6
300 - 1500	Frequency (Mhz)/1500 (0.2 - 1.0)	30	Frequency (Mhz)/300 (1.0 - 5.0)	6
1500 - 100,000	1.0	30	5.0	6

General population/uncontrolled limits apply in situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment, and may not be fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public always fall under this category when exposure is not employment-related.

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment, and those persons have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

It is important to understand that the FCC guidelines specify *exposure* limits not *emission* limits. For a transmitting facility to be out of compliance with the FCC's RF safety guidelines an area or areas where levels exceed the MPE limits must, first of all, be in some way *accessible* to the public or to workers. When accessibility to an area where excessive levels is appropriately restricted, the facility or operation can certify that it complies with the FCC requirements.

Appendix B: Measurement and/or Computer Simulation Methods

Spatial averaging measurement technique is used. An area between 2 and 6 feet, approximately the size of an average human, is scanned in single passes from top to bottom in multiple planes. When possible, measurements were made at very close proximity to the antennas and inside the main beam where most of the energy is emitted. The spatial averaged values were recorded.

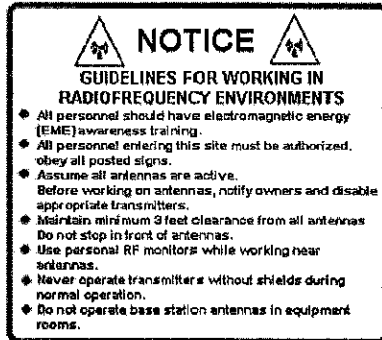
Dtech uses an industry standard power density prediction computer Model² to assess the worse-case, cumulative EMF impact of the surrounding areas of the subject site. The Model does not take into account losses due to buildings. Its methodologies are conservative enough to account for typical down-tilts deployed in wireless communications. In addition, the analysis is performed at 100% duty cycle-all transmitters are active at all times and transmitting at maximum power. For purposes of a cumulative study, nearby transmitters are included where possible. The result is a surrounding area map color-coded to percentages of the applicable FCC's MPE Limits. A result higher than 100% exceeds the Limits.

Appendix C: Limitations

Dtech performed this analysis based on data provided by our clients that Dtech believes to be true and correct. Estimates where noted, are based on common industry practices and our best interpretation of available information. As mobile technologies continuously change, these data and results may also change. Therefore, Dtech disclaims all other warranties either expressed or implied. Any use of this document constitutes an agreement to hold Dtech and its employees harmless and indemnify it for any and all liability, claims, demands, litigation expenses and attorneys fees arising from such use. This is a technical document and may contain minor grammatical and/or spelling errors.

² Roofview® Version 4.15, Richard Tell Associates, Inc. © 1996-2000.

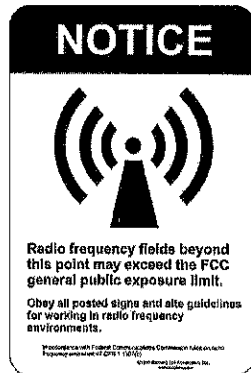
Appendix D: T-Mobile RF Advisory Signs



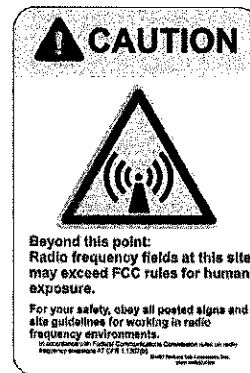
GUIDELINES Sign



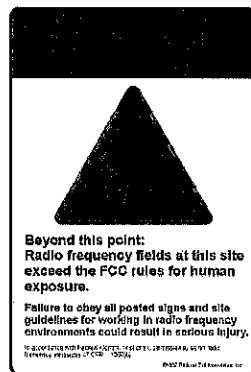
NOC Sign



NOTICE Sign



CAUTION Sign



WARNING Sign



TOWN OF PORTOLA VALLEY STAFF REPORT

TO: Planning Commission

FROM: Arly Cassidy, Associate Planner

DATE: September 20, 2017

RE: Preliminary Review of a New Conditional Use Permit for a Wireless Communication Facility, T-Mobile, Town Right-of-Way at 700 Portola Road, File # PLAN_USE 4-2017

RECOMMENDATION

Staff recommends that the Planning Commission convene a subcommittee to review wireless facilities and offer comments and direction on the proposed use permit for T-Mobile at 700 Portola Road.

BACKGROUND

T-Mobile is a telecommunications company with multiple wireless facilities in Portola Valley. In an effort to update their existing facilities and the permitting for such, they are re-applying for a use permit for wireless communication facilities on a telephone pole in the public right-of-way at 700 Portola Road. The pole sits across from Town Center on the northeast side of Portola Road, just south of the intersection with Farm Road (See Vicinity Map, Attachment 1).

T-Mobile applied for a use permit to install the existing equipment on July 29, 2011. Staff reviewed the permit and issued an Incomplete Letter, requesting further information before the project could be scheduled for review by the Planning Commission; no record of any further submittals or review for the application exist.

In April 2017, a representative for T-Mobile submitted an application to update the equipment at the site, stating that the company was attempting to bring all of its equipment into compliance at the same time that it was modernizing its installations. Staff found that the utility pole in question has had equipment on it for some time. The application is therefore a new conditional use permit for a location already in use, and new equipment as part of the modernization. Before installation takes place, however, PG&E will be replacing the existing pole, which leans toward Portola Road, with a new pole immediately to the south of it. All existing and new equipment will be installed on this new pole.

The proposed installation includes new equipment boxes, placing the antennas further from the pole, and shifting all equipment boxes to two metal pole mounts on the telephone pole. No

ground mounted equipment exists nor is proposed. Documents submitted in support of the use permit renewal include (Attachments 2 & 3):

- L21 Predicted Coverage map, received April 26, 2017
- Statement of Hammett & Edison, Inc., Consulting Engineers regarding radio frequency exposure, received April 26, 2017
- Project plans, received August 25, 2017

CODE REQUIREMENTS

Section 18.36.020 of the Municipal Code allows wireless communication facilities in all zoning districts as conditional uses. In order to grant a conditional use permit, the Planning Commission must make the following findings pursuant to PVMC Sections 18.72.130 and 18.41.060.B.

1. The proposed use or facility is properly located in relation to the community as a whole and to land uses and transportation and services facilities in the vicinity.
2. The site for the proposed use is adequate in size and shape to accommodate the proposed use and all yards, open spaces, walls and fences, parking, loading, and landscaping and such other features as may be required by this title or in the opinion of the commission be needed to assure that the proposed use will be reasonably compatible with land uses normally permitted in the surrounding area and will insure the privacy and rural outlook of neighboring residences.
3. The site for the proposed use will be served by streets and highways of adequate width and pavement type to carry the quantity and kind of traffic generated by the proposed use.
4. The proposed use will not adversely affect the abutting property or the permitted use thereof.
5. The site for the proposed use is demonstrated to be reasonably safe from or can be made reasonably safe from hazards of storm water runoff, soil erosion, earth movement, earthquake and other geologic hazards.
6. The proposed use will be in harmony with the general purpose and intent of this title and the general plan.
7. When this title or the town general plan specifies that a proposed use shall serve primarily the town and its spheres of influence, the applicant shall have demonstrated that a majority of business of the proposed use will come from the area immediately or within a reasonable period of time. In making such a demonstration, all similar uses in the town and its sphere of influence shall explicitly be taken into consideration by the applicant.
8. The placement, construction, or modification of the facility in the proposed location is necessary for the provision of wireless communication services to close a significant gap in coverage in the town.

9. The proposed site location and facility design have the least potential for adverse impacts and are the least intrusive means to close the service gap when compared to other feasible locations and system designs.

DISCUSSION

This is a request for a new conditional use permit to allow for the installation and operation of antennas and associated equipment for the T-Mobile wireless communications facility located within the Portola Road right-of-way. The proposal includes two new cabinets and two new diplexers, the relocation of the two existing antennas four feet eight inches (4'8") away from the pole to the west, and the placement of all new and existing cabinets onto two metal pole mounting system. The antennas themselves will not change, and the majority of the equipment boxes are existing and will remain.

The two new equipment boxes are a router and a ciena box, used primarily for data and broadband. The new diplexers are miniature and will be mounted directly onto two of the existing cabinets. The existing equipment boxes include four T-Mobile cabinets and a power box with shutdown switch. The existing and new equipment boxes will all be mounted onto two vertical metal mounts, labeled as JPAK-EM-100-08 Mount on the plans, on the north and east sides of the pole. These mounts attach to the pole along its length and extend out by less than a foot, with an aluminum channel running vertically in parallel to the pole, to which equipment can be attached. The new arrangement shows the equipment to be better clustered and placed higher up from the ground.

Current regulation limits local review of applications for installations of wireless facilities. While local zoning authority is preserved, there are significant limitations. However, the Town can take significant steps to control the aesthetic/visual impacts of the facilities as long as those steps don't result in making it impossible for the company to provide service to the area.

A note on sheet C-5.1 states that all equipment will be painted to match the pole. No tree trimming is required for installation. Existing trees block any view of the pole from Farm Road and Woodview Lane. In the past, the Town has requested that the antenna be as narrow and flush mounted as feasible.

The Town's Wireless Communication Facilities ordinance provides incentives for DAS (distributed antenna systems) or small cell systems and states that, "the planning commission may, during the preliminary review of the application, determine other permit streamlining actions that would be appropriate in light of the specific characteristics of the proposal (PVMC Section 18.41.050.A). Staff recommends that the Planning Commission convene a subcommittee consisting of the Public Works Director, Planning Director, and one ASCC, Trails and Conservation Committee member each. This subcommittee would review the project and offer its comments to the Planning Commission, which would then complete its review and vote on the project at a subsequent meeting.

Public Comments

No public comments have been received as of the writing of this report.

ENVIRONMENTAL REVIEW

The project is categorically exempt as not having potential for a significant effect on the environment under Section 15303 of the California Environmental Quality Act (CEQA) Guidelines. Specifically, the section exempts new construction of small structures.

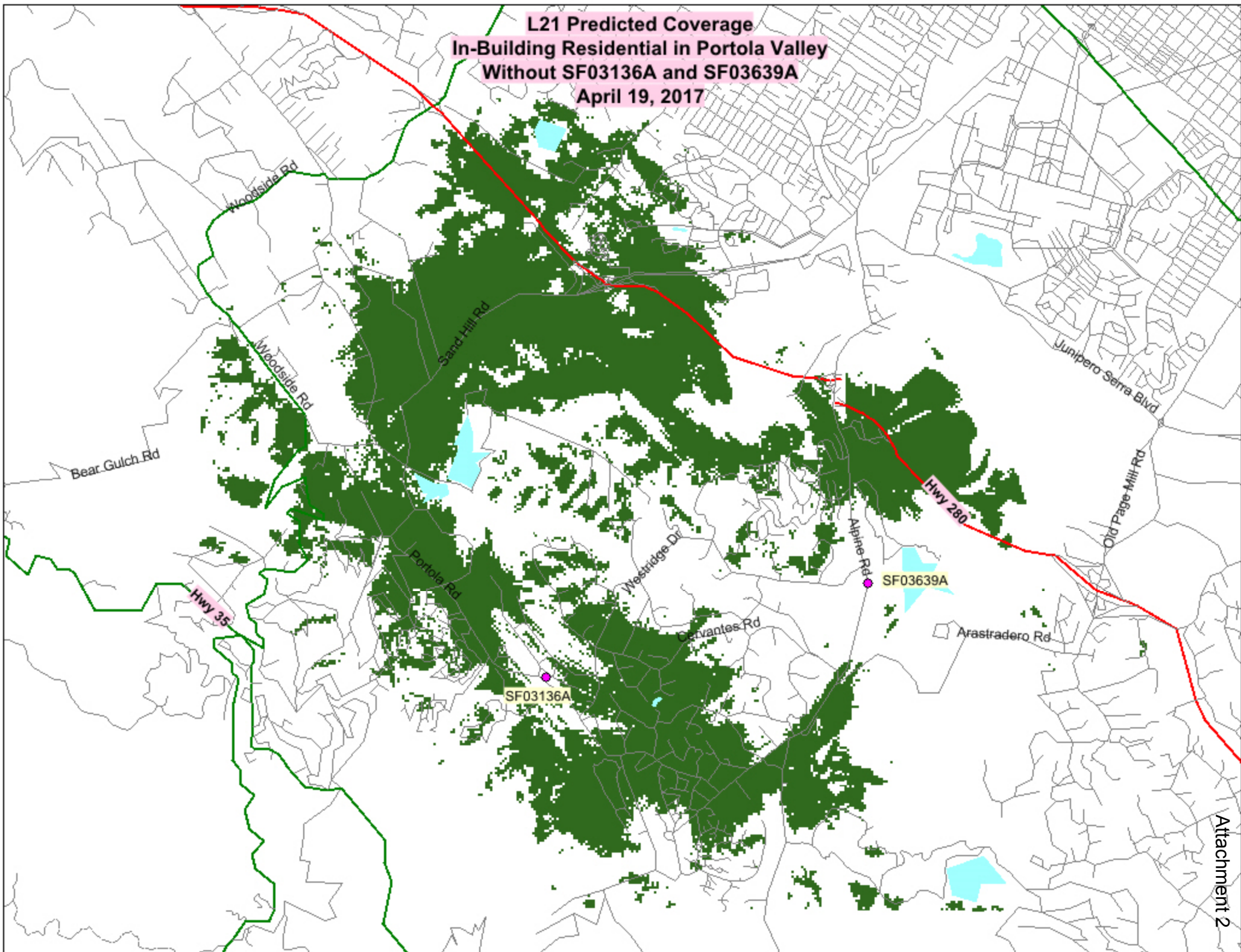
ATTACHMENTS

1. Vicinity Map
2. L21 Predicted Coverage map, received April 26, 2017
3. Statement of Hammett & Edison, Inc., Consulting Engineers regarding radio frequency exposure, received April 26, 2017
4. Project plans, received August 25, 2017 (Planning Commission only)

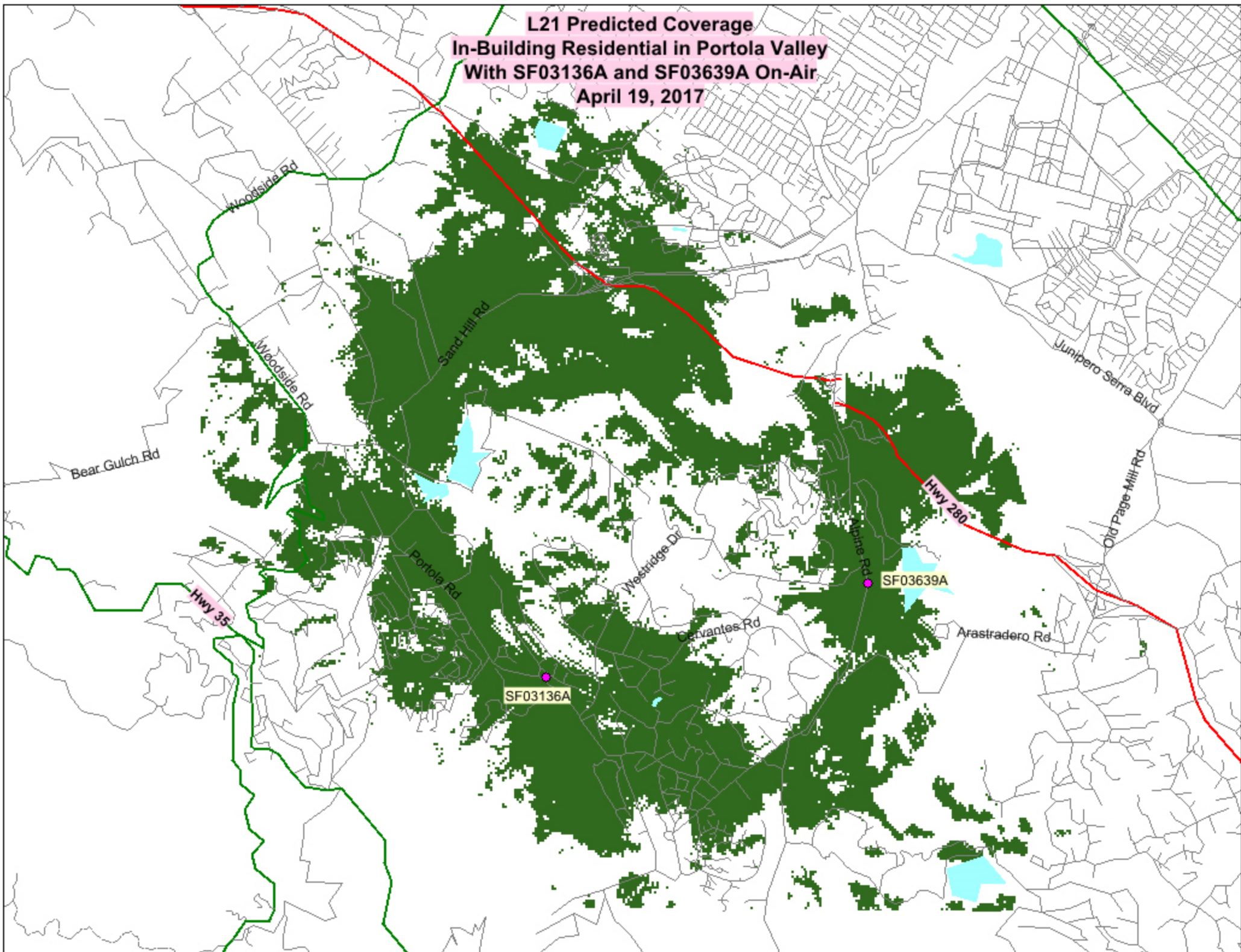
Report approved by: Debbie Pedro, Planning Director



**L21 Predicted Coverage
In-Building Residential in Portola Valley
Without SF03136A and SF03639A
April 19, 2017**



**L21 Predicted Coverage
In-Building Residential in Portola Valley
With SF03136A and SF03639A On-Air
April 19, 2017**



**T-Mobile West LLC • Base Station No. SF03136A
700 Portola Road • Portola Valley, California**

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by T-Mobile West LLC, a personal wireless telecommunications carrier, to evaluate proposed modifications to its existing base station (Site No. SF03136A) located at 700 Portola Road in Portola Valley, California, for compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

Executive Summary

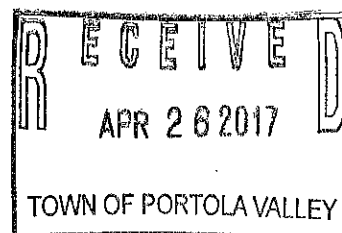
T-Mobile proposes to upgrade its transmitting equipment at the base station located at 700 Portola Road in Portola Valley; no changes are proposed to the current antenna configuration. The proposed operation will continue to comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

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

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

Power line frequencies (60 Hz) are well below the applicable range of these standards, and there is considered to be no compounding effect from simultaneous exposure to power line and radio frequency fields.



**T-Mobile West LLC • Base Station No. SF03136A
700 Portola Road • Portola Valley, California**

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 T-Mobile, including construction drawings by Black & Veatch, dated September 20, 2016, that carrier presently has two directional panel antennas installed on the 37½-foot wood utility pole sited across the street from the parking lot at the Town Hall, located at 765 Portola Road in Portola Valley. T-Mobile proposes to upgrade its equipment cabinets at the site. No changes are proposed to the current antenna configuration, consisting of two RFS Model APXV18-2065165 antennas employing no downtilt, mounted at an effective height of about 25 feet above ground, and oriented toward 140°T and 285°T. The maximum effective radiated power in any direction would be 490 watts, representing simultaneous operation at 240 watts for AWS and 250 watts for PCS service. There are reported no other wireless telecommunications base stations at the site or nearby.



**T-Mobile West LLC • Base Station No. SF03136A
700 Portola Road • Portola Valley, California**

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed T-Mobile operation is calculated to be 0.00080 mW/cm², which is 0.080% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building* is 0.050% of the public exposure limit. The maximum calculated level at the second-floor elevation of any nearby residence† is 0.13% of the public exposure limit. It should be noted that these results include several “worst-case” assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

Recommended Mitigation Measures

Due to their mounting location and height, the T-Mobile antennas would not be accessible to unauthorized persons, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training, to include review of personal monitor use and lockout/tagout procedures, be provided to all authorized personnel who have access to the structure, including employees and contractors of T-Mobile and of the utility companies. No access within 1 foot directly in front of the T-Mobile antennas themselves, such as might occur during certain maintenance activities, should be allowed while the base station is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that explanatory signs‡ be posted at the antennas and/or on the pole below the antennas, readily visible from any angle of approach to persons who might need to work within that distance.

Conclusion

Based on the information and analysis above, it is the undersigned’s professional opinion that the proposed operation of the T-Mobile West LLC base station located at 700 Portola Road in Portola Valley, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations. Training authorized personnel and posting explanatory signs are recommended to establish compliance with occupational exposure limits.

* The Town Hall, located about 120 feet to the south, based on photographs from Google Maps.

† Located at least 190 feet to the northwest and northeast, based on photographs from Google Maps.

‡ Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (e.g., a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health authority, or appropriate professionals may be required. Signage may also need to comply with the requirements of PUC GO95.

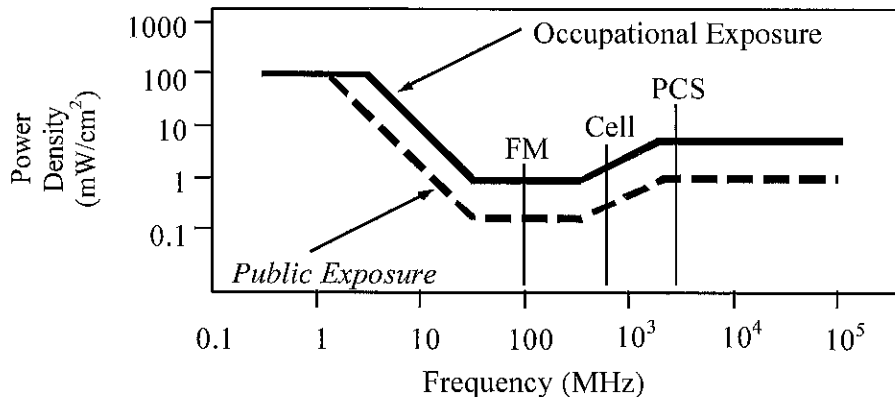


FCC Radio Frequency Protection Guide

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

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

Frequency Applicable Range (MHz)	Electromagnetic Fields (f is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm ²)	
0.3 – 1.34	614	<i>614</i>	1.63	<i>1.63</i>	100	<i>100</i>
1.34 – 3.0	614	<i>823.8/f</i>	1.63	<i>2.19/f</i>	100	<i>180/f²</i>
3.0 – 30	1842/f	<i>823.8/f</i>	4.89/f	<i>2.19/f</i>	900/f ²	<i>180/f²</i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	3.54√f	<i>1.59√f</i>	√f/106	<i>√f/238</i>	f/300	<i>f/1500</i>
1,500 – 100,000	137	<i>61.4</i>	0.364	<i>0.163</i>	5.0	<i>1.0</i>



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/cm²,

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/cm²,

where θ_{BW} = half-power beamwidth of the antenna, in degrees, and

P_{net} = net power input to the antenna, in watts,

D = distance from antenna, in meters,

h = aperture height of the antenna, in meters, and

η = aperture efficiency (unitless, typically 0.5-0.8).

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

Far Field.

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

power density $S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}$, in mW/cm²,

where ERP = total ERP (all polarizations), in kilowatts,

RFF = relative field factor at the direction to the actual point of calculation, and

D = distance from the center of radiation to the point of calculation, in meters.

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

