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April 18, 2018

VIA EMAIL

Chair Ken Rheaume
Vice Chair Carol Weiss
Commissioners Sue Harrison,
John Howe, Daniel Howard,
Ken Olevson and David Simons
Planning Commission
City of Sunnyvale
456 West Olive Avenue
Sunnyvale, California 94086

Re: Appeal of Verizon Wireless Application, File No. 2017-7973
Small Cell Facility, Public Right-of-Way at 214 Commercial Street
Planning Commission Agenda, April 23, 2018

Dear Chair Rheaume, Vice Chair Weiss and Commissioners:

We write on behalf of Verizon Wireless to ask that you uphold the approval of the Community Development Director and deny the appeal filed by Amanda Guillard (‘‘Appellant’’) of Verizon Wireless’s proposed small cell facility on an existing utility pole in an industrial area (the ‘‘Approved Facility’’). Verizon Wireless’s small cell design complies with the Council’s design criteria for right-of-way facilities, and it poses minimal visual impact. Appellant’s objections to the Approved Facility misconstrue Council design criteria and raise no conflict with City regulations. The Approved Facility will enhance Verizon Wireless network capacity for workers and commuters in the vicinity. We strongly encourage you to reject the appeal and approve the Approved Facility.

I. The Project

The Approved Facility has been thoughtfully designed to minimize any impact to the adjacent industrial area. Verizon Wireless proposes to place a narrow four-foot tall canister antenna on top of a 50.5 foot utility pole in the Commercial Street right-of-way. The new pole will replace an existing utility pole, and the overall height increase of 10 feet, including the antenna, is necessary to elevate the antenna seven feet above electrical supply conductors to comply with California Public Utilities Commission General Order 95. Electrical supply lines will actually be lowered approximately four feet to lessen the

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overall facility height. Additional equipment will be stacked vertically on the side of the pole between seven and 18 feet. An electrical meter will be mounted at seven feet above the sidewalk in compliance with rules of the pole owner, the Joint Pole Authority. A small electrical cut-off switch will be placed just above the electrical meter. Above the cut-off switch, Verizon Wireless will place a power cabinet, telecommunications interconnect boxes and a cluster of remote radio units (“RRUs”). All pole-mounted equipment will be painted to match the color of the wood utility pole and uniformly rotated away from the street to reduce visibility.

Photosimulations of the Approved Facility are attached as Exhibit A. A report by EBI Consulting, attached as Exhibit B, confirms that radio-frequency (“RF”) emissions from the Approved Facility will fully comply with Federal Communications Commission guidelines.

II. The Approved Facility Fully Complies with All Code Requirements and Council Design Criteria.

As confirmed in the Director’s approval, the Approved Facility meets all requirements for issuance of a miscellaneous plan permit for a right-of-way facility. In fact, because it meets all Council design criteria and is located over three hundred feet from any park, school or landmark, the Approved Facility was eligible for administrative approval by the Director. Code § 19.54.160(b).

The Approved Facility complies with all Council design criteria of Resolution 626-13. Verizon Wireless designed the Approved Facility at the minimum height required to meet Public Utilities Commission standards, increasing height less than 10 feet while the design criteria encourage an increase of no more than 12 feet (and then only when in view of residences of which there are none nearby). Though Verizon Wireless presented an alternate plan for equipment placed on the ground, all equipment is proposed on the pole as preferred by the design criteria. There is one four foot tall power cabinet proposed on the pole, mounted approximately 13 feet above ground level (“AGL”), and one 2 foot 4 inch tall set of RRUs mounted at 17 feet AGL, while the criteria require no more than three cabinets. In short, Verizon Wireless’s Approved Facility complies with all City regulations of wireless facilities in the right-of-way.

III. Verizon Wireless is Authorized to Place the Approved Facility in the Public Right-of-Way under State Law.

Verizon Wireless is entitled as a matter of law under California Public Utilities Code Section 7901 to install telephone equipment such as the Approved Facility “along any public road and highway,” subject only to reasonable local aesthetic criteria. Verizon Wireless is a telephone corporation as defined under Public Utilities Code Section 234 to include “every corporation or person owning, controlling, operating, or managing any telephone line for compensation within this state. . . .” A telephone line includes poles, fixtures and other equipment “managed in connection with or to facilitate communication

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by telephone, whether such communication is had with or without the use of transmission wires.” Public Utilities Code §233.

IV. There is Substantial Evidence for Approval and a Lack of Substantial Evidence for Denial.

Under the federal Telecommunications Act, a local government’s denial of a wireless facility application must be based on “substantial evidence.” *See* 47 U.S.C. § 332(c)(7)(B)(iii). As interpreted under controlling federal court decisions, this means that denial of an application must be based on requirements set forth in the local code and supported by evidence in the record. (*See Metro PCS, Inc. v. City and County of San Francisco*, 400 F.3d 715, 725 (9th Cir. 2005) [denial of application must be “authorized by applicable local regulations and supported by a reasonable amount of evidence”].) While a local government may regulate the placement of wireless facilities based on aesthetics, mere generalized concerns or opinions about aesthetics or compatibility with a neighborhood do not constitute substantial evidence upon which a local government could deny a permit. *See City of Rancho Palos Verdes v. Abrams*, 101 Cal. App. 4th 367, 381 (2002).

As set forth above, Verizon Wireless has provided substantial evidence to show that the Approved Facility complies with all requirements for approval under the Code and Council design criteria. Among other evidence, photosimulations demonstrate the minimal impact of Verizon Wireless’s small cell placed on a utility pole where there is existing utility infrastructure. Architectural drawings confirm compliance with design criteria as set forth above. The EBI Consulting report confirms that emissions from the Approved Facility will comply with FCC guidelines.

In contrast, Appellant has provided no evidence – let alone the substantial evidence required by federal law – to support denial of the Approved Facility. With respect to pole selection, Appellant cites a Council design criterion that pertains only to residential zones. However, this is inapplicable to the Approved Facility which is surrounded by MS (industrial and service) zones. The nearest residential zone is over 0.4 miles south well beyond Central Expressway. Nonetheless, as encouraged by this criterion, Verizon Wireless has placed the Approved Facility nearly flush with a parcel line, adjacent to a neighboring driveway and away from street corners. Though Council design criteria do not contemplate aesthetic impacts in industrial areas, Verizon Wireless explored nearby poles to determine the feasibility of locating next to existing street trees. These poles were determined to be unworkable alternatives as explained in the Alternatives Analysis attached as Exhibit C. The subject pole is 20 feet from Appellant’s business, and with equipment stacked vertically on the pole and painted to match, the Approved Facility presents little impact. Appellant’s objections over pole selection uncover no conflict with Code or design criteria and must be dismissed.

Appellant raises concerns regarding safety with respect to vehicle traffic in the area. There is no pole-mounted equipment below seven feet, and, at staff’s request,

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Verizon Wireless will place two bollards on either side of the pole as an extra precaution against any vehicle collisions. The pole-mounted equipment and sidewalk bollards do not impact parking along Commercial Street. The Director's conditions of approval require adequate clearance to comply with the Americans with Disabilities Act, and pedestrian and vehicle safety will be evaluated by the Engineering Division during encroachment permit review. The Approved Facility poses no impact to public safety, and will in fact provide an important benefit through improved communication with emergency service personnel. Appellant's unfounded safety concerns raise no conflict with City regulations and must be dismissed.

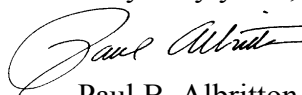
Lastly, Appellant raises the design criteria restriction on new overhead lines and limit of equipment cabinets to three. The subject pole already supports electrical supply lines and a fiber line. Any required telecommunications interconnect by a separate company is beyond the scope of this application. There is only one cabinet proposed for the Approved Facility, the four foot tall power cabinet mounted at 13 feet AGL, and one set of 2 foot 4 inch tall RRUs mounted at 17 feet AGL. Other equipment components are much smaller, no more than 1.4 cubic feet. The antenna is not a cabinet, and, as determined by staff, small equipment components such as the power disconnect (shut-off) switch are not counted as cabinets. If necessary, Verizon Wireless can place a box around the set of RRUs. Even if the number of cabinets is counted differently to exceed three, the Code would simply require review by the Planning Commission, which is already occurring as a result of the appeal. Code § 19.54.160(c). Nonetheless, the Director approval confirms compliance with these criteria, and Appellant's challenges are without merit.

In sum, Appellant raises no grounds for appeal that constitute substantial evidence to deny the Approved Facility. In contrast, Verizon Wireless has provided ample evidence that the Approved Facility complies with all City requirements. The appeal must be rejected.

Conclusion

Verizon Wireless has worked diligently to identify the ideal location and design for a small cell facility to serve the busy Commercial Street industrial corridor. As confirmed by the Director's approval, the Approved Facility meets all Code and Council design criteria for right-of-way facilities. Appellant raises no substantial evidence to contradict this approval. Ensuring reliable Verizon Wireless service in this area is critical to workers, businesses and emergency service personnel. We strongly encourage you to follow staff's recommendation to affirm the Director's approval and deny the appeal.

Very truly yours,



Paul B. Albritton

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April 18, 2018

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cc: Rebecca Moon, Esq.
Melissa Tronquet, Esq.
Andrew Miner
Mary Jeyaprakash

Schedule of Exhibits

Exhibit A: Photosimulations
Exhibit B: EBI Consulting RF Exposure Report
Exhibit C: Alternatives Analysis

PROPOSED SITE LOCATION



SITE COORDINATES
 LATITUDE: 37.378339
 LONGITUDE: -122.007839

Exhibit A

SUNNYVALE 016

214 Commercial Street
 Sunnyvale, CA 94085
 Location Code: 440990

SHOT MAP

VERIZON NODE: "Sunnyvale 016"
Verizon Location Code: 440990



The CBR Group
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 Martinez, CA 94553
 info@thecbrgroup.com

EXISTING



PROPOSED



SUNNYVALE 016

214 Commercial Street
Sunnyvale, CA 94085
Location Code: 440990

VIEW 1: LOOKING SOUTH ALONG
COMMERCIAL STREET
PHOTOSIMS PRODUCED 02/13/2018

verizon



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EXISTING



PROPOSED



SUNNYVALE 016

214 Commercial Street
Sunnyvale, CA 94085
Location Code: 440990

VIEW 2: LOOKING EAST ACROSS
COMMERCIAL STREET
PHOTOSIMS PRODUCED 02/13/2018

verizon



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Radio Frequency - Electromagnetic Energy (RF-EME) Jurisdictional Report

Site No. 440990
Sunnyvale 016
214 Commercial Street
Sunnyvale, California 94086
Santa Clara County
37° 22' 42.02" N, -122° 0' 28.22" W NAD83

EBI Project No. 6217005366
November 22, 2017



Prepared for:
Verizon Wireless
c/o The CBR Group Inc.
841 Arnold Drive, Suite A & B
Martinez, CA 94553

Prepared by:



RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

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RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Verizon Wireless to conduct radio frequency electromagnetic (RF-EME) modeling for Verizon Site 440990 located at 214 Commercial Street in Sunnyvale, California to determine RF-EME exposure levels from proposed Verizon wireless communications equipment at this site. As described in greater detail in Section 2.0 of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, there are no modeled areas on any accessible ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site. Additionally, there are areas where workers who may be elevated above the ground may be exposed to power densities greater than the occupational limits. Therefore, workers should be informed about the presence and locations of antennas and their associated fields.

At the nearest walking/working surfaces to the Verizon antennas, the maximum power density generated by the Verizon antennas is approximately **2.20** percent of the FCC's general public limit (**0.44** percent of the FCC's occupational limit).

Recommended control measures are outlined in Section 5.0 and within a Site Safety Plan (attached); this plan includes instructions to shut down and lockout/tagout this wireless equipment in accordance with Verizon's standard operating protocol.

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

1.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per seconds (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Verizon in this area operate within a frequency range of 700-2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. 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.

2.0 SITE DESCRIPTION

This project site includes one (1) omni-directional wireless telecommunication antenna on a utility pole located at 214 Commercial Street in Sunnyvale, California.

Verizon Antenna Information (proposed Configuration)									
Antenna# and Model	Frequency (MHz)	# of Transmitters	Transmit Power (Watts)	Azimuth	Gain (dBd)	Feet above Ground (CL)	X	Y	Z
Amphenol CUUT360X12Fxyz	700	2	40	Omni	3.35	50.83 ft AGL	50	50	48.83
	1900	4	40		7.35				
	2100	4	40		7.85				

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered uncontrolled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Section 3.0. Appendix B presents a site safety plan that provides a plan view of the utility pole with antenna locations.

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

3.0 FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure 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 public/uncontrolled limits (see below), 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.

General public/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Table I and Figure I (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm²). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm²) and an uncontrolled MPE of 1 mW/cm² for equipment operating in the 1900 MHz frequency range. For the Verizon equipment operating at 700 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm² and an uncontrolled MPE of 0.57 mW/cm². These limits are considered protective of these populations.

Table I: 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

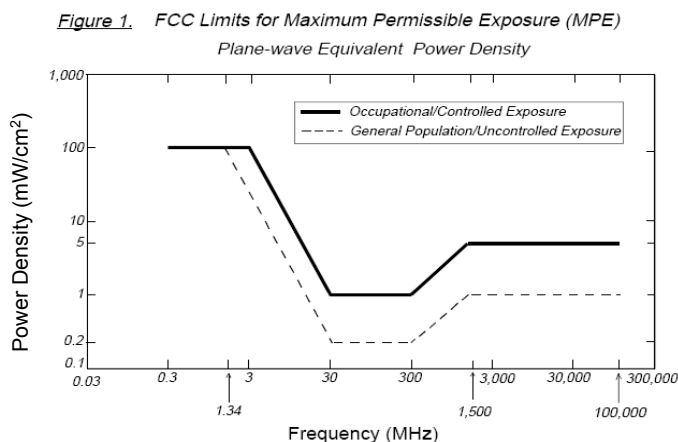
RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

Table 1: 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)
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/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
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Cellular Telephone	870 MHz	2.90 mW/cm ²	0.58 mW/cm ²
Specialized Mobile Radio	855 MHz	2.85 mW/cm ²	0.57 mW/cm ²
Most Restrictive Freq. Range	30-300 MHz	1.00 mW/cm ²	0.20 mW/cm ²

MPE limits are designed to provide a substantial margin of safety. 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.

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

Personal Communication (PCS) facilities used by Verizon in this area operate within a frequency range of 700-2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

4.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical modeling using RoofView® software to estimate the worst-case power density at the site ground-level and nearby roof-tops resulting from operation of the antennas. RoofView® is a widely-used predictive modeling program that has been developed by Richard Tell Associates to predict both near field and far field RF power density values for roof-top and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

The modeling is based on worst-case assumptions for the number of antennas and transmitter power. The modeling assumes a maximum of 10-radio transmitters with a power level of 40 watts per transmitter for the 700, 1900, and 2100 MHz frequencies, in order to provide a worst-case evaluation of predicted MPE levels. The assumptions used in the modeling are based upon information provided by Verizon, and information gathered from other sources. The parameters used for the modeling are summarized in the RoofView® export files presented in Appendix C.

There are no other wireless carriers with equipment installed at this site.

Based on worst-case predictive modeling, there are no modeled areas on any accessible ground-level walking/working surface related to the proposed Verizon antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the Verizon antennas, the maximum power density generated by the Verizon antennas is approximately 2.20 percent of the FCC's general public limit (0.44 percent of the FCC's occupational limit).

The Site Safety Plan also presents areas where Verizon Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

The inputs used in the modeling are summarized in the RoofView® export file presented in Appendix C. A graphical representation of the RoofView® modeling results is presented in Appendix B. It should be noted that RoofView is not suitable for modeling microwave dish antennas; however, these units are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage.

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

5.0 MITIGATION/SITE CONTROL OPTIONS

EBI's modeling indicates that there are no areas in front of the Verizon antennas that exceed the FCC standards for occupational or general public exposure at ground level. All exposures above the FCC's safe limits require that individuals be elevated above the ground. In order to alert people accessing the pole, CAUTION signs are recommended for installation on opposite sides of the pole 8' below the bottom of the antenna.

There are no barriers recommended on this site.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the roof should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage, and signify their understanding of the Site Safety Plan.

Implementation of the signage recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

6.0 SUMMARY AND CONCLUSIONS

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Verizon Site Number 440990 located at 214 Commercial Street in Sunnyvale, California to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, there are no modeled areas on any accessible ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site. Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 5.0 and within a Site Safety Plan (attached); this plan includes procedures to shut down and lockout/tagout this wireless equipment in accordance with Verizon's standard operating protocol.

7.0 LIMITATIONS

This report was prepared for the use of Verizon Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

Appendix A

Certifications

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, CA

Reviewed and Approved by:



sealed 24nov2017

Michael McGuire
Electrical Engineer

Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the structure, as well as the impact of the antennas and broadcast equipment on the structural integrity of the structure, are specifically excluded from EBI's scope of work.

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

Preparer Certification

I, Christopher Ilgenfritz, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.



RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

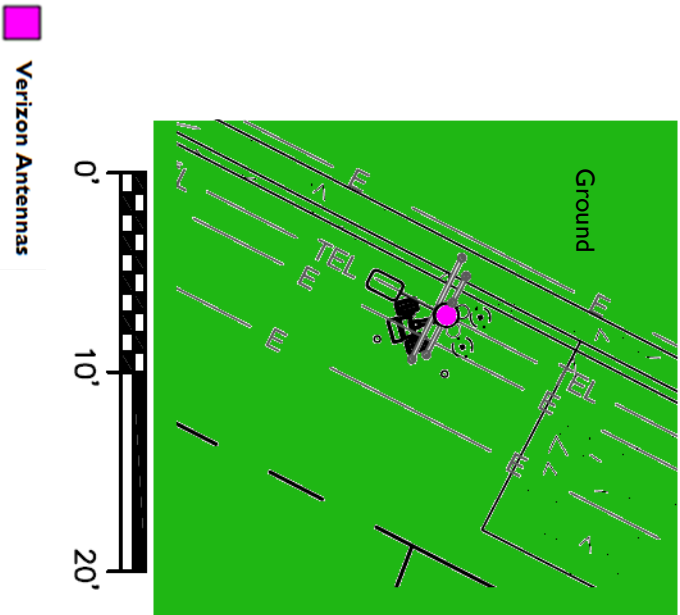
Appendix B

Radio Frequency Electromagnetic Energy

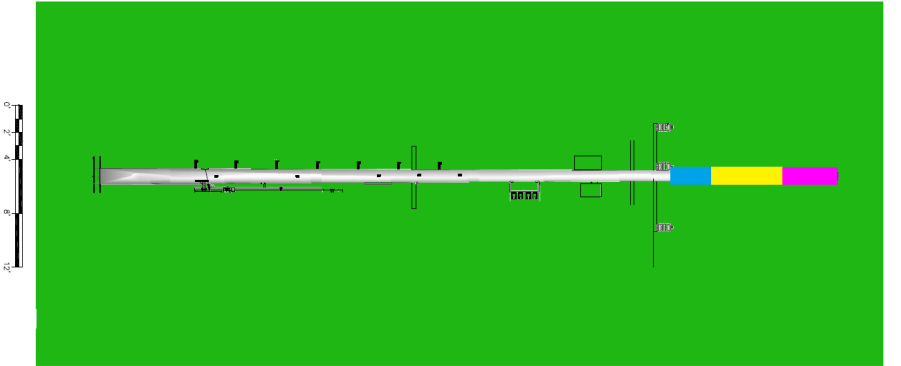
Safety / Signage Plans

% FCC Public Exposure Limit	
<div></div>	Exposure Level $\geq 5,000$
<div></div>	$500 < \text{Exposure Level} \leq 5,000$
<div></div>	$100 < \text{Exposure Level} \leq 500$
<div></div>	Exposure Level ≤ 100

Ground Level



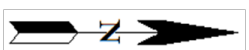
Down Pole



Roofview: Composite Exposure Levels
Facility Operator: Verizon Wireless
Site Name: Sunnyvale 016
Verizon Site Number: 440990
Report Date: 11-22-17

Exposure Level > 5

Exposure Level ≤ 5



Verizon Antennas

Roofview: Verizon Exposure Levels

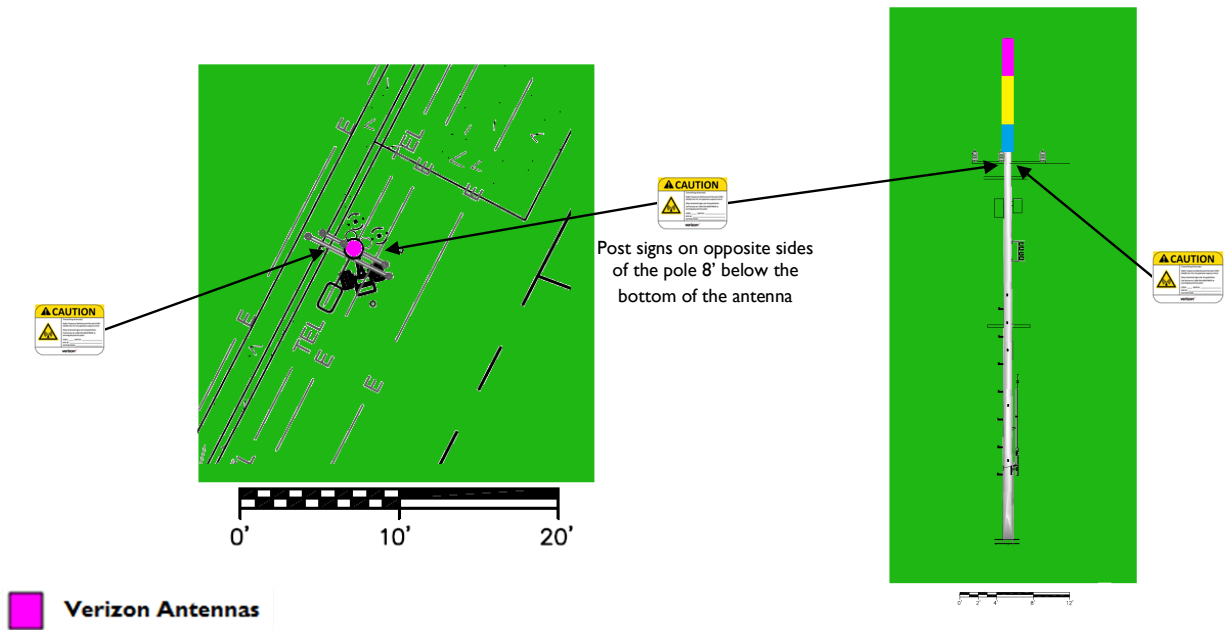
Facility Operator: Verizon Wireless


Site Name: Sunnysvale 016

Verizon Site Number: 440990

Report Date: 11-22-17

Verizon Signage Plan



Sign Image	Description	Posting Instructions	Required Signage
	Yellow Caution Sign Used to alert individuals that they are entering an area where the power density emitted from transmitting antennas may exceed the FCC's maximum permissible exposure limit for the general public and the occupational exposure limit.	Securely post at every point of access to the site in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.	Post signs on opposite sides of the pole 8' below the bottom of the antenna

RF-EME Compliance Report
EBI Project No. 6217005366

Site No. 440990
214 Commercial Street, Sunnyvale, California

Appendix C

Roofview® Export File

StartMapDefinition	RooftMaxX	RooftMaxY	MapMaxX	MapMaxY	X Offset	Y Offset	Number of envelope					
	120	120	140	140	20	20	1 SAES81:SE SAES81:SET5200					
StartSettingsData	Standard	Method										
	4											
StartAntennaData	ID	Name	Freq	Power	Trans	Coax	Coax	Other	Input	Power	Power	Calc
	VZW A1	LTE	700	40	2	0	0	1				
	VZW A1	LTE	1900	40	4	0	0	1.5				
	VZW A1	LTE	2100	40	4	0	0	1.5				
	It is advisable to provide an ID (ent 1) for all antennas											
	Uptime	Scale	Factc	Low Thr	Mid Color	Mid Thr	500	4	5000	Hi Color		
	2	1	1	100	1	500						
	Ap Ht Mult Ap Ht Method											
	1.5 1											
StartSymbolData	Sym	Map Mark	Rooft X	Rooft Y	Map Label Description (notes for this table only)							
	5		35	AC Unit	Sample symbols							
	Sym		14	5 Roof Access								
	Sym		45	5 AC Unit								
	Sym		45	20 Ladder								
List Of Areas SAES81:SET5200												



VERIZON SMALL CELL FOR SAN SUNNYVALE POLYGON ALTERNATIVE SITE ANALYSIS

Verizon Small Cell Node “Sunnyvale 016” (near 214 Commercial St.)

Prepared December 21, 2017



Exhibit C

OVERVIEW

- Verizon is proposing to install a small cell standalone project in the area to improve network coverage and capacity.
- A small cell is just like the name implies. A small cell augments Verizon's capacity in a given area. It consists of a radio, antenna, power and a fiber connection. Small Cells are short range mobile cell sites used to complement larger macro cells (or cell towers). Small cells enable the Verizon network team to strategically add capacity to high traffic areas.
- Demand for wireless data services has nearly doubled over the last year, and is expected to grow 650% between 2013 and 2018 according to Cisco. It's part of Verizon's network strategy to provide reliable service and to stay ahead of this booming demand for wireless data.

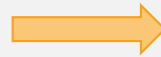
ALTERNATIVE ANALYSIS

- In addition to the proposed existing wooden utility pole location for this Node, Verizon considered poles immediately adjacent to the proposed pole to explain why it was selected.
- Existing antenna towers, monopoles, and rooftops located more than 150 feet from the proposed location are not viable alternatives for the small cell network because they do not meet Radio Frequency Coverage requirements, i.e., network objectives.
- The Node site is low in height, has low power, and is a reduced size antenna site that provides coverage to small areas.
- Cells interact with each other, and are laid out in a logical pattern to provide optimal coverage conditions to address service, capacity, reliability, and access for users. This network architecture in Small Cells is geographically very tight, and precludes alternative locations at greater distances.

SHOT MAP OF PROPOSED SITE LOCATION AND ALTERNATIVES CONSIDERED



PROPOSED POLE (214 COMMERCIAL ST.)



Sunnyvale 016

Revision Date 11/07/2017

ALTERNATE SITE #1 (198 COMMERCIAL ST.)

Node - Alternative Site #1

This alternative location is a wood utility pole located in the Public ROW. This pole is located near 198 Commercial St.

Pole Elimination Justification:

There is not adequate climbing space to add the Verizon equipment to the existing utility pole as it would comply to GO95 Rule 94.



ALTERNATE SITE #2 (221 COMMERCIAL ST.)



Sunnyvale 016

Node - Alternative Site #2

This alternative location is a wood utility pole located in the Public ROW. The nearest address is 221 Commercial St.

Pole Elimination Justification:

This candidate was eliminated as the City does not have a Master License Agreement in place for Verizon to locate equipment on the existing City Light Pole.

ALTERNATE SITE #3 (222 COMMERCIAL ST.)

Node - Alternative Site #3

This alternative location is a wood utility pole located in the Public ROW. This pole is located near 222 Commercial St.

Pole Elimination Justification:

PG&E does not allow cell sites on Primary Riser poles. This pole has Primary Riser on the pole and thereby PG&E will not allow Verizon equipment to be placed on the pole.



ALTERNATE SITE #4 (221 COMMERCIAL ST.)



Sunnyvale 016

Node - Alternative Site #4

This alternative location is a wood utility pole located in the Public ROW. The nearest address is 221 Commercial St.

Pole Elimination Justification:

This candidate was eliminated as the City does not have a Master License Agreement in place for Verizon to locate equipment on the existing City Light Pole.

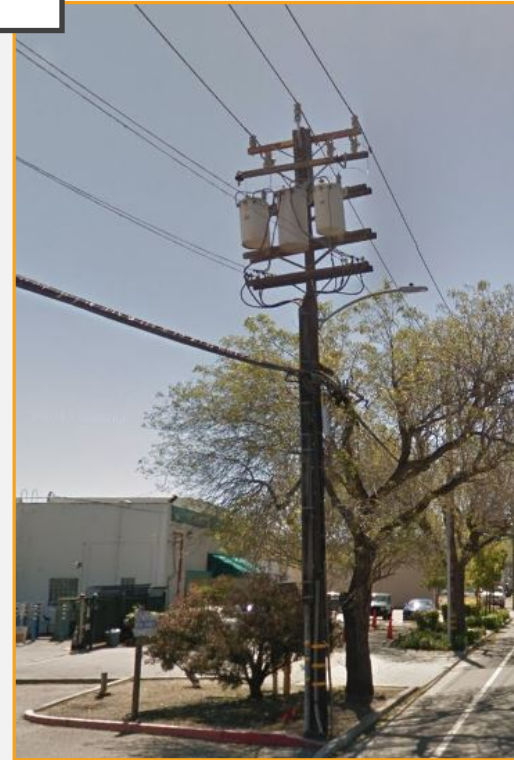
ALTERNATE SITE #5 (230 COMMERCIAL ST.)

Node - Alternative Site #5

This alternative location is a wood utility pole located in the Public ROW. This pole is located near 230 Commercial St.

Pole Elimination Justification:

There is not adequate climbing space to add the Verizon equipment to the existing utility pole as it would comply to GO95 Rule 94.



LEAST INTRUSIVE MEANS

Small Cell facilities are small form factor, smaller radio frequency footprint base stations that allow carriers to place appropriate facilities in areas where full size radio base stations are not appropriate. Some equipment is located in a switch or Hub facility some miles away, further reducing the scale and quantity of equipment on site. This proposal is consistent with the least intrusive means to provide coverage for current generation of service within a residential district.

Typical Macro facility – industry standard sized colocateable facility with full compliment of radios



Sunnyvale 016

Small Cell example similar to this proposal



Revision Date 11/07/2017

THANK YOU

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