Verizon Wireless – Project Description

Verizon Wireless is seeking a Preliminary Review for the design of proposed small cell attachments on wood poles owned and operated by the City of Palo Alto Utilities (CPAU). A brief overview is provided of Verizon Wireless' citywide efforts to provide more robust wireless service to the City of Palo Alto through the colocation of small cells on existing city-owned infrastructure. Small cells are currently proposed in three (3) configurations that are dependent on whether emergency battery backup is needed at a particular location, as well as the design opportunities and constraints of specific pole locations. Details of the design options for the proposed three (3) configurations are presented here for consideration and feedback by the Architectural Review Board.

Project Overview

Verizon Wireless has entered into a Master License Agreement ("MLA") with the City of Palo Alto allowing the attachment of antennas and other equipment ("small cells") on city owned infrastructure in the right-of-way (ROW). Based on the need to provide network coverage and capacity, Verizon Wireless Radio engineers identify locations throughout the city that require service. Ninety-two (92) such wireless communication facility ("WCF") installations are currently planned to be co-located on wood utility poles and metal streetlights. Eighty (80) of these small cells are proposed to be co-located on existing wood utility poles; only twelve (12) small cells are proposed to be installed on existing city streetlights. Verizon Wireless and CPAU are still working out the specifics for streetlight locations, *so their design is not addressed in this application.* These small cells will provide the City of Palo Alto much needed improvements in network capacity and coverage.

Submissions for formal review by the ARB will be in groupings of applications or "clusters", the first of which (Cluster 1) contains eighteen (18) proposed small cells. Cluster 1 contains only wood utility poles, therefore at this time Verizon Wireless is seeking design feedback from the Architectural Review Board *exclusively for the configuration and design of only small cells located on wood poles*. Additionally, of the ninety-two (92) currently anticipated citywide small cell locations, eighty (80) are conceived on wood poles, so this design warrants an in depth discussion.

Community Need for Small Cells

The unprecedented current and future demand for wireless service requires the densification of existing cellular networks. As a result, wireless communication facilities are diminishing in height and being located closer to the user to meet both daily needs as well as provide essential coverage for emergency personnel. While terrain is relatively flat, the dense foliage of the tree canopy combined with difficulty in permitting macro wireless communication facilities presents unique challenges in the provision of coverage to the City of Palo Alto. Verizon Wireless must increase both coverage and capacity throughout the city to meet current and future customer demand. *Attachment A – Coverage Maps* contains coverage maps that depict this need for coverage in the city. As the map demonstrates, there are significant gaps in the coverage area where Verizon Wireless has proposed the eighteen (18) Cluster 1 small cells.

Small Cells are the least visually intrusive method to provide the City of Palo Alto the required capacity and coverage. The miniaturization of the equipment used for cellular communications allows for these

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small cells to be located on existing infrastructure, reducing the need for new WCF structures and minimizing visual impact to the surrounding community. Additionally, these small cells are able to be located in areas where traditional "macro" wireless communication facilities cannot be located, so that essential communication services can be provided to critical areas all while co-locating on existing infrastructure. Furthermore, the addition of these small cells will both meet the current coverage and capacity needs, as well as provide the road map to future technologies for the next generation of wireless capability to the community in Palo Alto.

Siting Guidelines

Small cells differ from traditional "macro" cells in that their miniature quality dictates that they cover only a very small area and therefore can only move a short distance (measured in feet) within an identified area of need. In selecting a specific pole to serve an area, Verizon Wireless performs a thorough analysis of the existing infrastructure utilizing the Siting Guidelines from *Attachment B – Siting Guidelines* to determine the most appropriate location.

The standards contained in the Small Cell Siting Guidelines working document have been developed by compiling the criteria and constraints of various regulating agencies. In siting small cells, Verizon Wireless is required to adhere to the standards of the California Public Utilities Commission (General Order 95 Requirements, Rule 94); the engineering and real estate requirements of property owner City of Palo Alto Utilities (CPAU); Development Standards for wireless communication facility (WCF) locations from PAMC §18.42.110(i); and the Architectural Review Findings of PAMC §18.76.020. Criteria have been further adjusted as city staff from Planning, Urban Forestry, CPAU, and the Art Department have all made time to attend site walks with Verizon Wireless real estate, engineering and construction teams in their fielding efforts. Additionally, previous small cell and DAS installations in the City of Palo Alto were analyzed to take into account previous findings and recommendations by staff, the public and reviewing bodies.

Pole Selection / Alternative Site Analysis

Based on the need to provide network coverage and capacity, Verizon Wireless Radio Frequency engineers identify locations or "nodes" throughout the city to improve and optimize network performance. Each proposed node is then visited by a team to identify existing city-owned structures available for colocation within the proposed coverage area. During this fielding walk, criteria and constraints are applied by City of Palo Alto Utilities Engineering, as well as Verizon Wireless Engineering, Real Estate and Construction to determine the most suitable pole, subsequently identified as the "primary" location. Additional poles within the coverage area are either designated as viable alternatives or eliminated for the various reasons outlined in the guidelines. These criteria have been compiled into the Small Cell Siting Guidelines previously mentioned and contained in *Attachment B – Siting Guidelines*.

Beyond the Engineering Criteria, pole selection is based on a thoughtful consideration of the surrounding environment in which the proposed small cell is located. Poles with existing favorable site features such as landscaping and tree foliage are prioritized to provide natural screening to reduce the visual impact of small cell attachments. Poles are selected to reduce the impact on views from streets as well as adjacent residences. Site selection was further constrained to avoid poles located in private residential easements (e.g. backyards) and close proximity to second story windows.

Because small cells have less flexibility in where they can be located, they can only be moved a short distance while maintaining the required performance. In *Attachment C – Prelim ARB Alternative Siting Analysis*, Verizon Wireless has prepared three (3) examples for the Architectural Review Board to demonstrate some of the opportunities and constraints that determine which pole has been selected for a particular small cell location. For each node a map of poles considered has been provided, along with a detailed table outlining the reasons why the alternate poles were not feasible.

As those alternative site analyses demonstrate, many seemingly suitable poles must be eliminated for engineering or other reasons.

Quite often, as these three (3) examples demonstrate, there is only one suitable pole for a small cell within a designated coverage area.

Small Cell Node Design Requirements

Verizon Wireless has engineered these small cells utilizing the most streamlined equipment available to meet the capacity and coverage requirements. For each small cell, Verizon Wireless network engineering requires one (1) antenna, three (3) radios, one (1) small electrical disconnect box, in some cases a battery backup unit located either on the pole or on the ground adjacent to the pole, and associated conduit for RF and electrical cabling. Details of how this equipment is attached to wood poles are depicted in *Attachment D – Proposed Configurations*. Further specifications of each piece of equipment are outlined on the detail pages (D-1, D-2) of the site plans contained in *Attachment E – Configuration 1, Attachment F – Configuration 2, and Attachment G – Configuration 3*.

To further its commitment to provide essential communications during a disaster resulting in loss of power, Verizon Wireless has proposed four (4) hours of battery backup on the most essential small cell nodes. Battery backup will provide critical network coverage for First Responders and users should power be lost. The City of Palo Alto Emergency Management Services uses the Verizon Wireless network for their cellular communications and has expressed support for their use of emergency battery backup for small cells. Verizon Wireless Engineering has a strong preference to have emergency battery back up on all eighteen (18) nodes in Cluster 1. However, Verizon Wireless recognizes the increased visual effect of additional batteries and in an effort to reduce that impact, has selected only the most essential locations. For each site with battery back up the small cell will also require either one (1) ground mount battery cabinet or one (1) pole mount battery backup with an additional disconnect, and the additional associated cabling to the cabinet.

Required equipment has been arranged into the three (3) aforementioned proposed configurations, with selection dependent on the engineering requirements of a small cell coverage area, as well as the constraints of a particular pole location.

The assignment of configurations for each proposed small cell in Cluster 1 is provided in *Attachment I – Cluster 1 Configurations*; a map is provided in *Attachment J –Map of Cluster 1 Configurations*.

As currently conceived, all wood pole designs would require all pole-mounted equipment to be painted brown to blend with the pole. Paint samples (Kelly Moore: Railroad Ties KMA67, Log Cabin KMA76 and Clay Bath KM4595) are included in *Attachment K – Proposed Paint Samples* and *Verizon Wireless is seeking feedback from the Architectural Review Board on a final selection. Additionally, should all pole mounted equipment including mounts and cabling be painted?*

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Configuration 1: Emergency battery backup critical

The proposed Configuration 1 is designed with one (1) antenna, three (3) radios, and one (1) disconnect installed on the pole and the emergency battery backup cabinet installed on the ground adjacent to the pole. This is the Verizon Wireless Engineering preferred design as it contains emergency battery backup to maintain coverage for all three (3) radios for a total of four (4) hours, in case of a disaster resulting in loss of power. It is assumed that both fiber and power will be provided via an aerial drop from above on the pole minimizing the ground disturbance to a small (approximately five (5) to ten (10) feet) trench for this scenario.

For Configuration 1 only, the ground box is placed on a 32" x 32" concrete pad, with a 54" tall cabinet, and is currently conceived to be painted a green color to blend in with surrounding landscaping. If natural screening does not exist, it will be proposed. *Paint samples (Kelly Moore: Lone Pine KM4798 and Acanthus Leaf KM4796) are included in Attachment K – Proposed Paint Samples and Verizon Wireless is seeking feedback from the Architectural Review Board on a final selection.*

In addition to paint Verizon Wireless has engineered some street furniture options as a means to provide further stealthing in areas where deemed necessary. Available street furniture options include benches, a green relay mailbox or trash can. The emergency battery cabinet also creates a unique opportunity for public art projects such as art wraps. All options are outlined in *Attachment L – Proposed Ground Cabinet Stealth Options*. *Verizon Wireless is seeking feedback from the Architectural Review Board for the street furniture as well as the art wrap concept.*

Three (3) nodes of Cluster 1 are designed with Configuration 1. For reference, these locations are shown in *Attachment J –Map of Cluster 1 Configurations* and *Attachment E – Configuration 1,* contains a detailed site plan of this particular configuration.

Configuration 2: Emergency battery backup essential, but no space

The proposed Configuration 2 is designed with one (1) antenna, three (3) radios, two (2) disconnects, and emergency battery cabinet, all located on the pole. Verizon Wireless selects this scenario for locations where battery is required, but there is insufficient space for a ground cabinet. The modification from a ground cabinet to a pole-mounted design for the emergency does entail a significant concession in the capability. Configuration 2 will provide four (4) hours of battery backup for only one (1) radio on the small cell. In comparison, the ground mounted cabinet from Configurations 1 will provide a full four (4) hours of battery backup for all three (3) radios. As a result, when Configuration 2 is installed, in case of a disaster resulting in loss of power, there would be reduction in network capacity at this particular location.

Two (2) nodes of Cluster 1 are designed with Configuration 2. For reference these locations are shown in *Attachment J –Map of Cluster 1 Configurations* and *Attachment F – Configuration 2* contains a detailed site plan of this particular configuration.

Configuration 3: Emergency battery backup currently not proposed

The proposed Configuration 3 is designed with one (1) antenna, three (3) radios, and one (1) disconnect installed. Battery backup is not proposed in this design.

As previously mentioned, Verizon Wireless Engineering prefers emergency battery backup at all small cell locations. However, given the potential visual impact, Verizon has decided at this time not to request the additional equipment required to provide backup battery service. While the pole-mounted battery in Configuration 2 represents a significant concession in emergency battery capability, it is critical to emphasize that Configuration 3 *provides absolutely no emergency battery backup and in case of a disaster resulting in loss of power, there would be a significant reduction in network capacity and coverage at this particular location.*

Thirteen (13) nodes of Cluster 1 are designed with Configuration 3. For reference, these locations are shown in in *Attachment J –Map of Cluster 1 Configurations* and *Attachment G – Configuration 3* contains a detailed site plan of this particular configuration.

Submission in Clusters

Based on detailed discussions with the city, Verizon Wireless will submit its Conditional Use and Architectural Review (CUP/ARB) applications for consideration in five separate "clusters", easing the burden on staff so that they may prepare one staff report per cluster. The currently planned small cells have been divided based on geography and therefore these groupings by neighborhood will aid Verizon Wireless in their community outreach for the project.

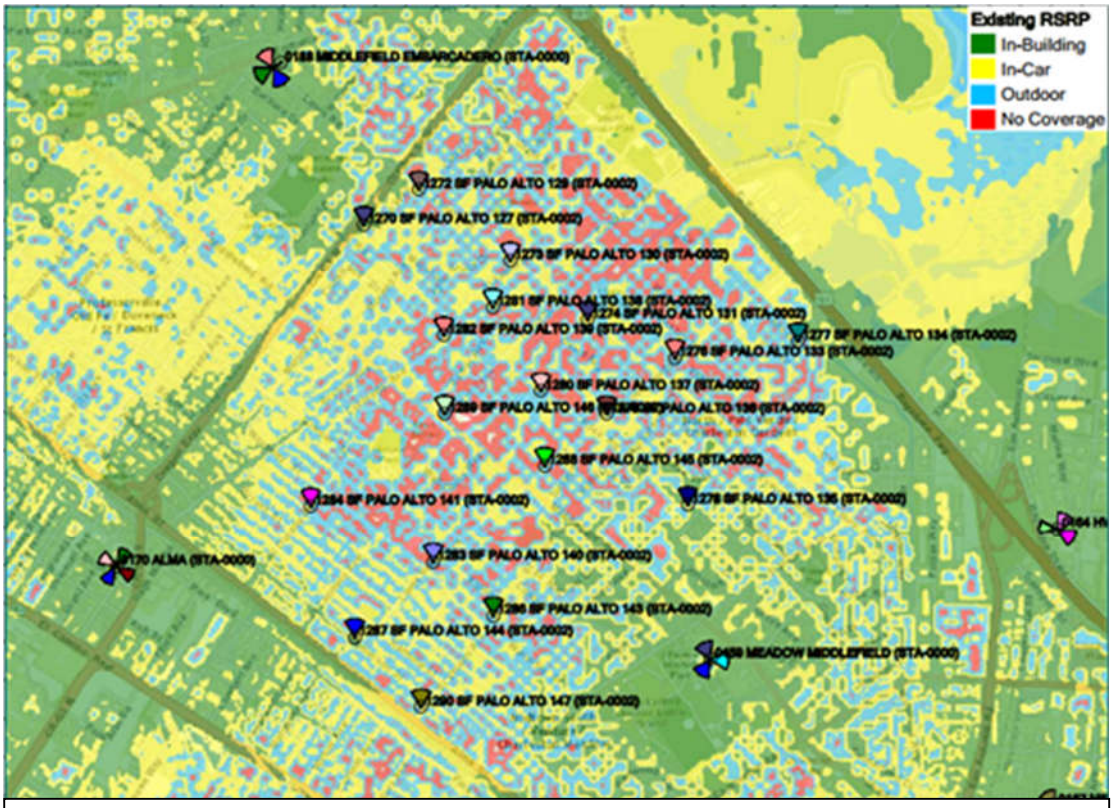
Even though these proposed small cells will be submitted in clusters and are linked to the greater Verizon Wireless network, it is important to note that each wireless communication facility (WCF) acts independently of any other small cell. The utility of each node is not dependent on a neighbor or any other node.

Model Small Cell

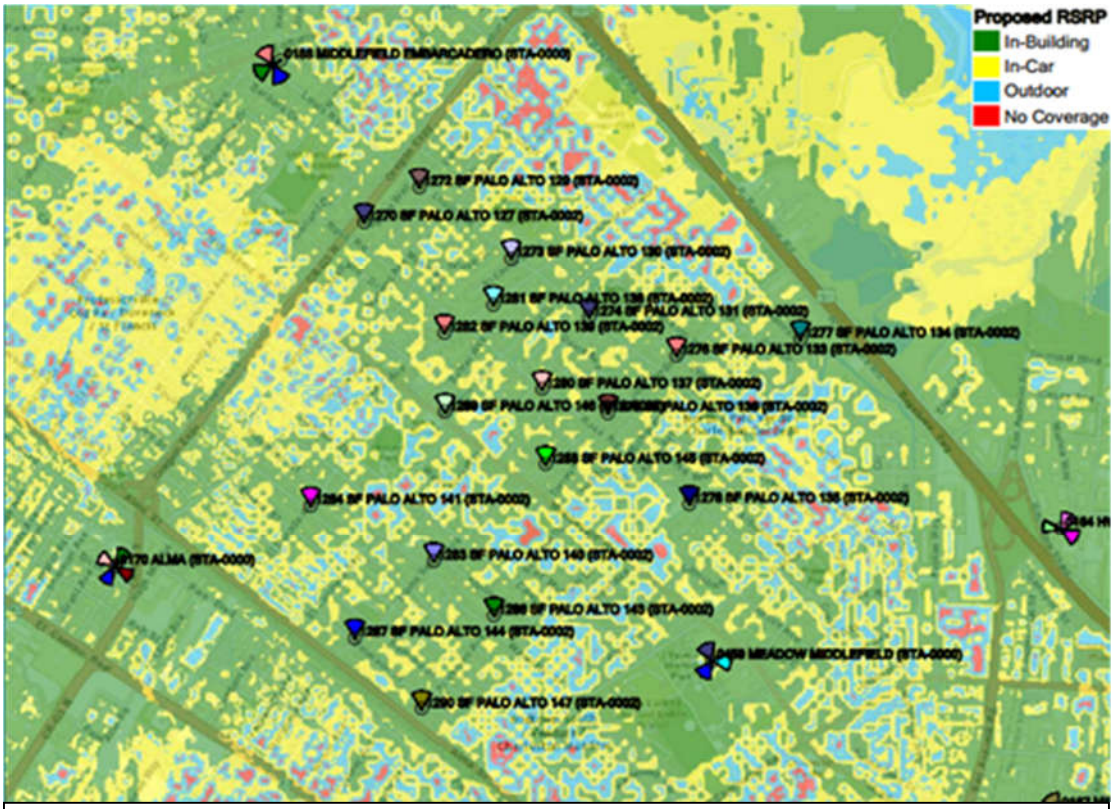
To make transparent for staff and the community how a small cell will look in the real world, Verizon Wireless has received permission from CPAU to locate a mock-up on the wood pole adjacent to 1350 Newell Road. Both pole mounted equipment and the ground-mounted emergency battery backup cabinet are proposed to be located here. While the equipment would not be turned while the pole is used for a model small cell, Verizon Wireless would still apply for all the required permits in order to complete the small cell, along with noticing and community input. The proposed location is shown in a photo in *Attachment M – Proposed Model Small Cell*.

Verizon Wireless is seeking the feedback of the Architectural Review Board on preference for street furniture to be placed at the proposed model small cell. Street furniture is detailed in Attachment L – Proposed Ground Cabinet Stealth Options. If a wrap is chosen, it may create a unique opportunity for a community art project in collaboration with the City Art Department.

Attachment A – Coverage Maps



Existing coverage area – small cells in Cluster 1 turned **OFF**.



Coverage with small cells in Cluster 1 turned **ON**.

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Attachment B – Small Cell Siting Guidelines

Vinculums Services has created this working document, a compilation of criteria and constraints of various regulating agencies, on behalf of Verizon Wireless in its efforts to site small cells in Palo Alto. Verizon Wireless is required to adhere to the standards of the California Public Utilities Commission (General Order 95 Requirements); the engineering and real estate requirements of property owner City of Palo Alto Utilities (CPAU);

City of Palo Alto Development Standards for wireless communication facility (WCF) locations from PAMC §18.42.110(i); and the Architectural Review Findings of PAMC §18.76.020.

Engineering Criteria

Nature of Small Cells--small cells differ from traditional "macro" cells in that their miniature quality dictates that they can only move a very small distance (measured in feet) and still serve their intended purpose.

Verizon Wireless engineering proposed locations are fielded using the criteria below to select a utility pole or streetlight from existing city infrastructure:

City of Palo Alto Utility (Pole Owner) Pole Attachment Mandates

- All Attachments must meet California Public Utilities General Order 95
    - Climbing space
    - Clearances between power and/or other attachments
    - Required distances for separation between pole and equipment
    - Required distances for separation between equipment
- City of Palo Alto Utilities (CPAU) prioritizes the provision of service to its customers. The siting of attachments on poles is secondary and therefore:
    - No attachments allowed on poles with primary power risers
    - No attachments allowed on poles with transformers or other special equipment
    - Primary Line and Buck (primary power lines attaching to the pole at 90 degrees or in perpendicular fashion) situations have a modified climbing space requirement, requiring more pole real estate than otherwise required under State Public Utility Code
    - Various other situations where the provision of electrical service would be compromised by attachment

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City of Palo Alto Utility Preferences (in order of importance)

1. Guy stubs - Poles that do not have any electrical or communications; they simply provide a structural tie point for a guy wire for a neighboring pole
2. Poles with overhead secondary power conductors only – Secondary power (typically) being the second from the top level of power on the pole and which provides residential power (120/240 Volts AC)
3. Primary dead-end poles – A pole at the end of a line of poles which no poles further down the line
4. Primary poles with no transformers downstream on the poles to end of line of poles
5. Primary poles with no electric utility equipment on the poles on either side of the proposed pole

Development Criteria

Development Standards from PAMC §18.42.110(i)

- Shall utilize the smallest footprint possible
- Shall be designed to minimize the overall height, mass, and size of the cabinet and enclosure structure
- Be screened from public view
- Be architecturally compatible with the existing site
- Be placed at a location that would not require the removal of any required landscaping or would reduce the quantity of landscaping to a level of noncompliance with the Zoning Code
- An Antenna, Base Station, or Tower shall be designed to minimize its visibility from off-site locations and shall be of a "camouflaged" or "stealth" design, including concealment, screening, and other techniques to hide or blend the Antenna, Base Station, or Tower into the surrounding area

Planning and Residential Considerations

- Prioritize poles which have tree foliage close to help camouflage the pole mounted equipment
- Prioritize poles that are located near evergreen trees, rather than deciduous trees
- Select a location for ground based emergency battery equipment that meets standards identified in Tree Technical Manual
- Face the pole-mounted equipment away from direct views of the adjacent home, toward the street when no foliage is present to hide the equipment
- Consolidate equipment to reduce the visual clutter; move the ground mounted equipment onto the pole when there is not enough right-of-way or deemed too obtrusive to the residents
- In general, prefer locations mid-block instead of at more visible corners/intersections
- Determine the most advantageous height that is least disruptive to views from both pedestrian and the adjacent residences

Attachment C – Prelim ARB Alternative Siting Analysis

Prelim ARB - Proposed Small Cell Nodes

Alternative Site Analysis follows for each of the following proposed nodes:

Node ID	Config	Verified Pole Height	Adjacent Address	Adjacent APN
SF PALO ALTO 143	Configuration 1	38.26	419 EL VERANO AVE PALO ALTO, 94306-3007	13215017
SF PALO ALTO 135	Configuration 2	42.86	795 STONE LN PALO ALTO, 94303-4413	12747001
SF PALO ALTO 139	Configuration 3	39.59	2793 RANDERS CT PALO ALTO, 94303	12734115

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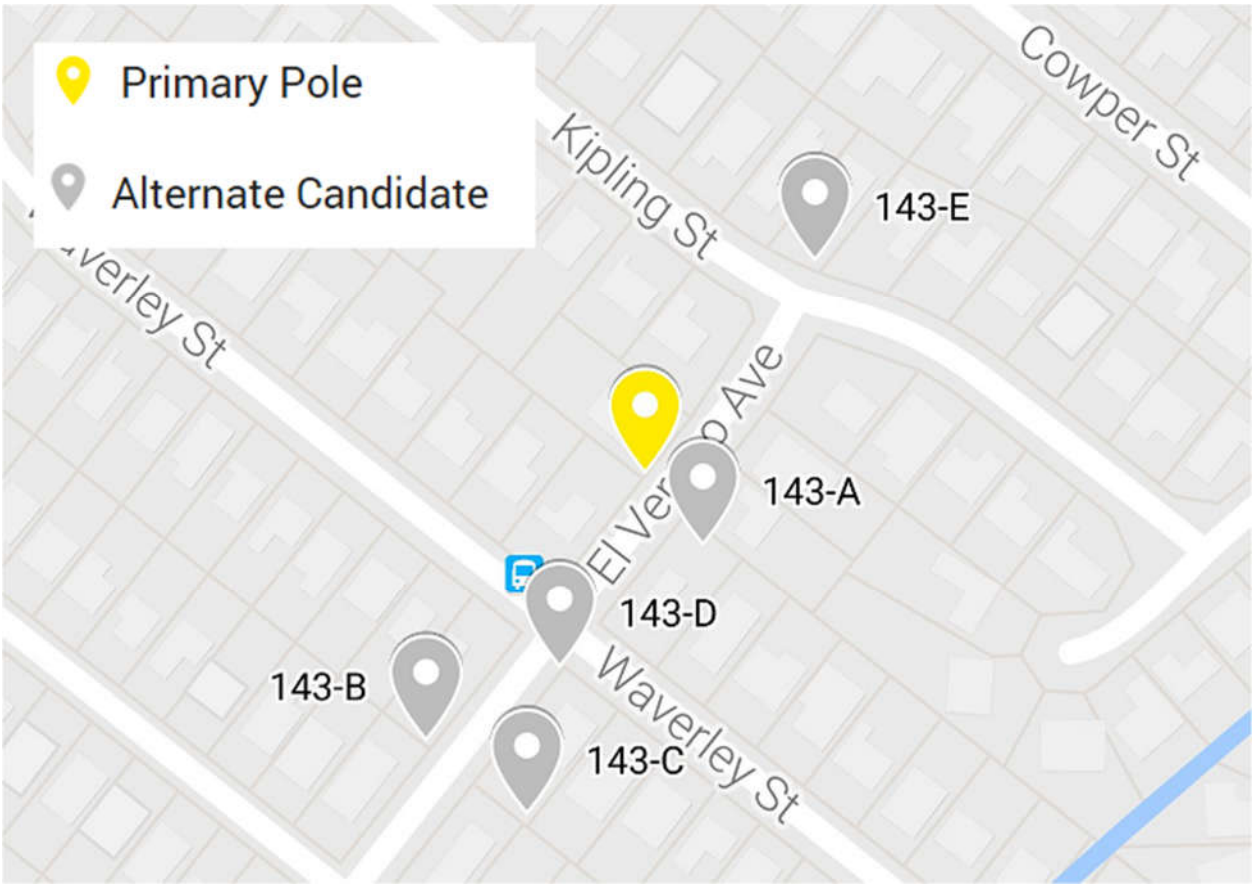
SF PALO ALTO 143 – Alternative Siting Analysis - Map and Details



Alternate Candidate ID	Structure Type	Fallout Reason	Pole #	Fallout Note
143-A	Wood Pole	CPAU Engineering	3866	Utility engineering constraints would not allow an attachment. Switch located on pole. Additionally, poles located in private property (residential easements) are only selected as a last resort, given potential disturbance to adjacent neighbor.
143-B	Wood Pole	CPAU Engineering	3889	Utility engineering constraints would not allow an attachment. Transformer located on pole - wireless equipment not permitted.
143-C	Wood Pole	Planning	Unknown	Poles located on private property (residential easement) are only selected as a last resort, given potential disturbance to adjacent resident. Could not get pole number as it is located in backyard.
143-D	Metal Street Light	Planning	18	Viable location, but not selected as primary because 1) antenna location on streetlight is lower than on wood pole; 2) high visibility corners are not preferred per the planning siting guidelines; and 3) streetlights are a lower preference than wood poles per the planning siting guidelines.
143-E	Wood Pole	Planning	Unknown	Poles located on private property (residential easement) are only selected as a last resort, given potential disturbance to adjacent resident. Could not get pole number as it is located in yard.

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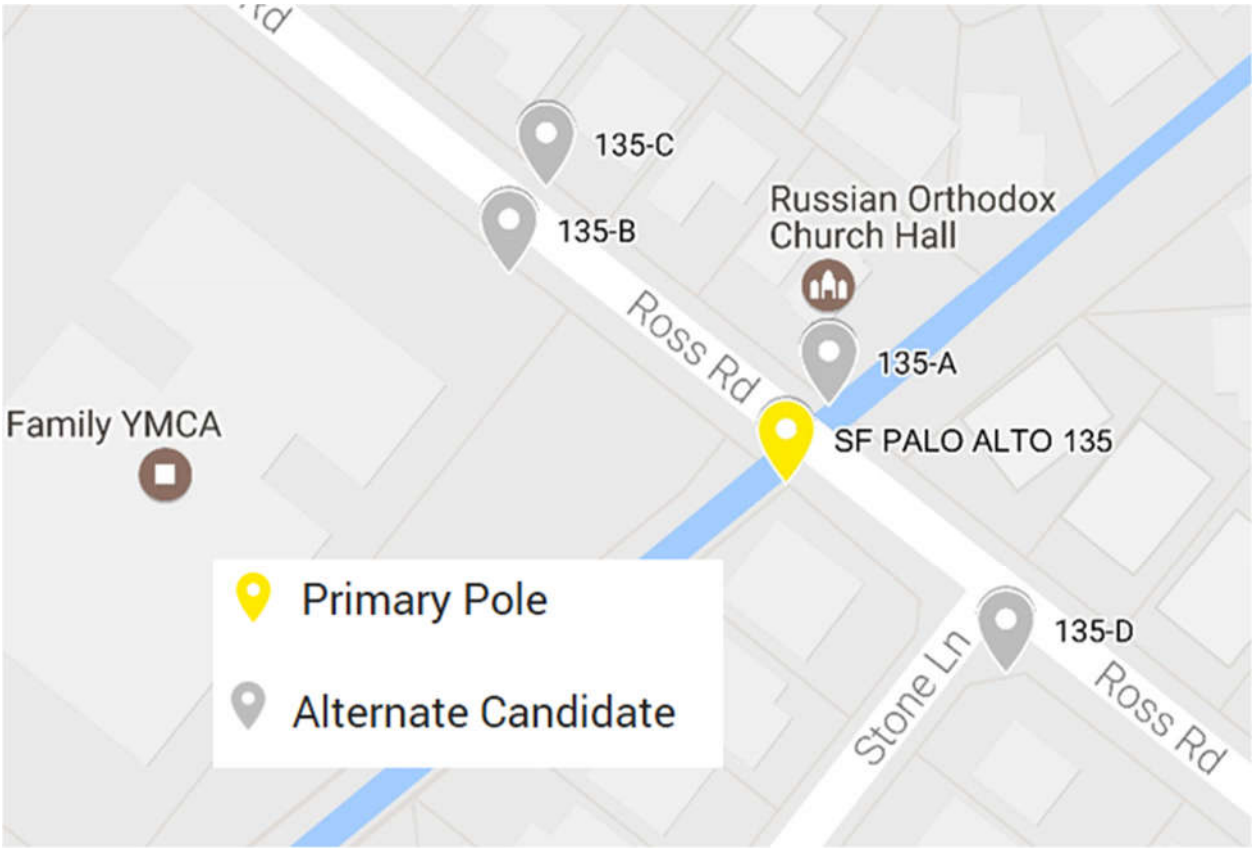
SF PALO ALTO 135 - Alternative Siting Analysis - Map and Details



Alternate Candidate ID	Structure Type	Fallout Reason	Pole #	Fallout Note
135-A	Wood Pole	Planning	3611	Development constraints around this particular pole. Attachment could impede access to existing Santa Clara Valley Water District canal.
135-B	Wood Pole	Planning	3371	Pole not selected as it appears to have higher visual impact--located near driveway.
135-C	Metal Street Light	Planning	342	High visibility corners are not preferred per the planning siting guidelines.
135-D	Wood Pole	Planning	3609	High visibility corners are not preferred per the planning siting guidelines.

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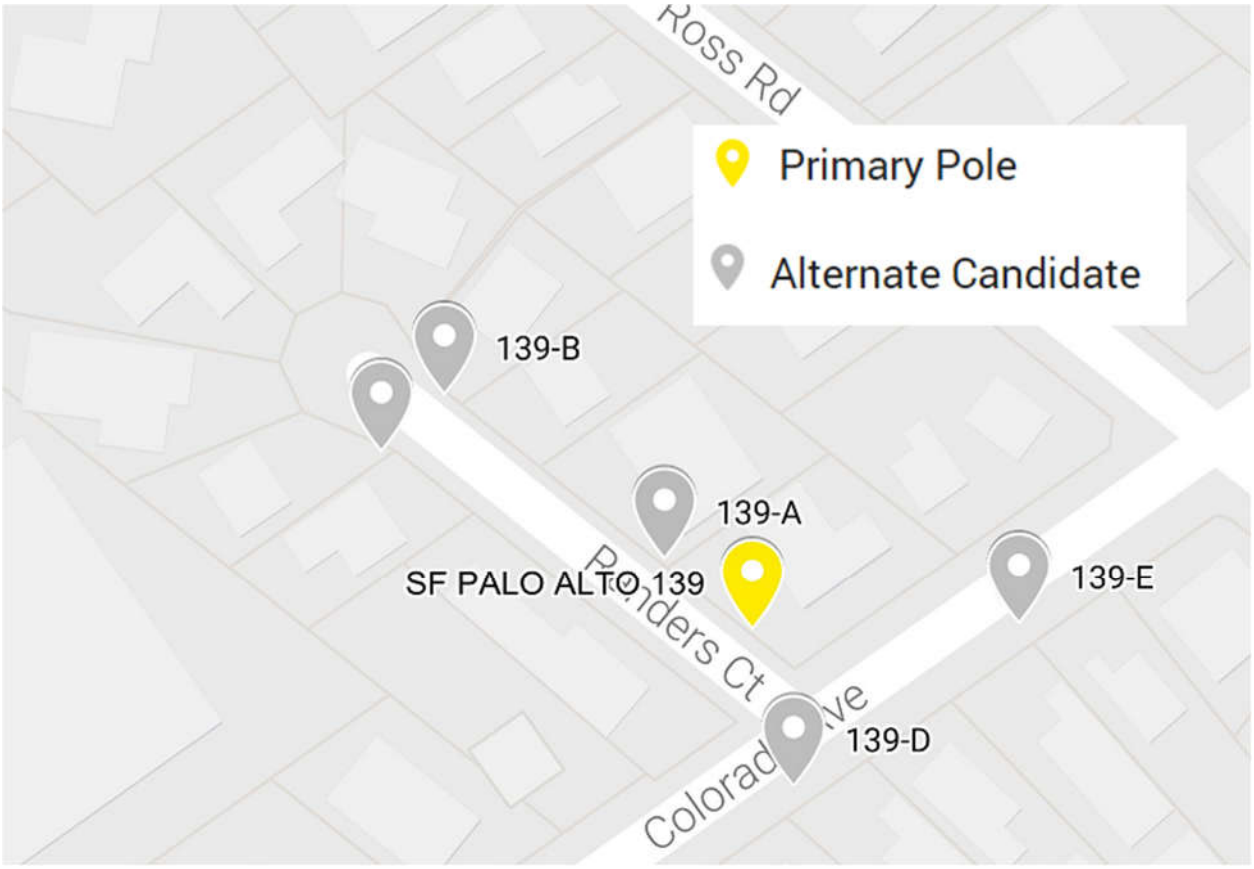
SF PALO ALTO 139 - Alternative Siting Analysis - Map and Details



Alternate Candidate ID	Structure Type	Fallout Reason	Pole #	Fallout Note
139-A	Metal Street Light	VZW Engineering	272	Not selected as primary because 1) antenna location on streetlight is lower than on wood pole; and 2) streetlights are a lower preference than wood poles per the planning siting guidelines.
139-B	Wood Pole	CPAU Engineering	2490	Utility engineering constraints would not allow an attachment. Transformer on pole - wireless equipment not permitted.
139-C	Metal Street Light	VZW Engineering	271	Not selected as primary because 1) antenna location on streetlight is lower than on wood pole; and 2) streetlights are a lower preference than wood poles per the planning siting guidelines.
139-D	Wood Pole	CPAU Engineering	2488	Utility engineering constraints would not allow an attachment. Risers on pole - wireless equipment not permitted. If pole was viable for CPAU Engineering, it would not be selected as primary because 1) high visibility corners are not preferred per the planning siting guidelines; and 2) tree canopy exposure.
139-E	Wood Pole	CPAU Engineering	2487	Utility engineering constraints would not allow an attachment. Transformer on pole - wireless equipment not permitted.

Attachment D – Proposed Configurations

Attachment D contains a detailed elevation drawing of all prosed equipment for Configurations 1, 2 and 3, as well as a photo simulation of each scenario depicted on CPAU approved utility poles.

See large and small format prints provided for proposed configurations on wooden poles.

Attachment E – Configuration 1

Wood Utility Pole with Ground-Mounted Emergency Battery Backup

Verizon Wireless requires emergency battery backup the proposed small cell located near 419 El Verano Ave. (Node 143). The emergency battery equipment is currently proposed to be located in existing landscape strip located within the right-of-way. See attached site plan with pole elevations and equipment detail.

See large and small format prints provided for design details of Configuration 1.

Verizon Wireless is seeking feedback on both the configuration of the pole mounted equipment as well as the shade of brown paint to be used for the pole-mounted equipment. The emergency battery cabinet can be painted a shade of green and screened within the landscaping strip.

Attachment F – Configuration 2

Wood Utility Pole with Pole-Mounted Emergency Battery Backup

The proposed small cell located near 795 Stone Lane (Node 135) is located on a Santa Clara Valley Water District canal. Verizon Wireless requires emergency battery backup in this location. However, location of ground-mounted equipment cabinet could interfere with the Water District's operation. Therefore, Verizon Wireless has proposed a pole-mounted location for this scenario. See attached site plan with pole elevations and equipment detail.

See large and small format prints provided for design details of Configuration 2.

Verizon Wireless is seeking feedback on both the configuration of the pole mounted equipment as well as the shade of brown to be used for the equipment

Attachment G – Configuration 3

Wood Utility Pole without Emergency Battery Backup

The proposed small cell located near 2793 Randers Court (Node 139) is located within a residential area. As such, Verizon Wireless has proposed only pole mounted equipment at this location. See attached site plan with pole elevations and equipment detail.

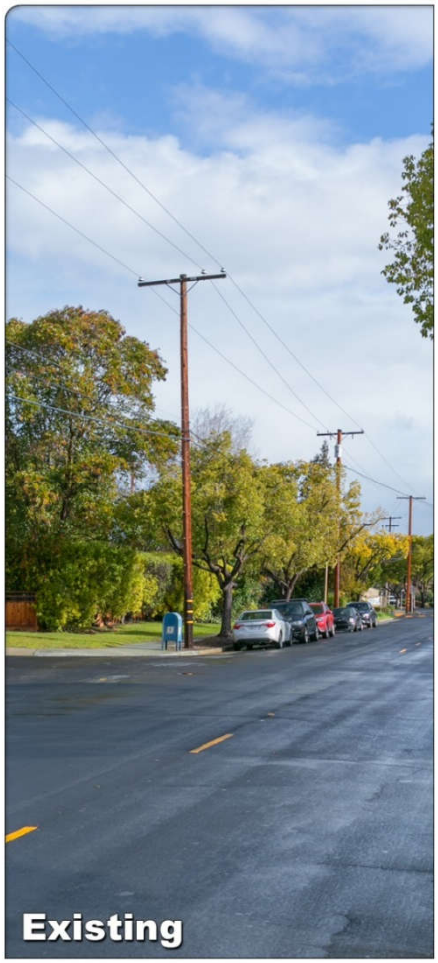
See large and small format prints provided for design details of Configuration 3.

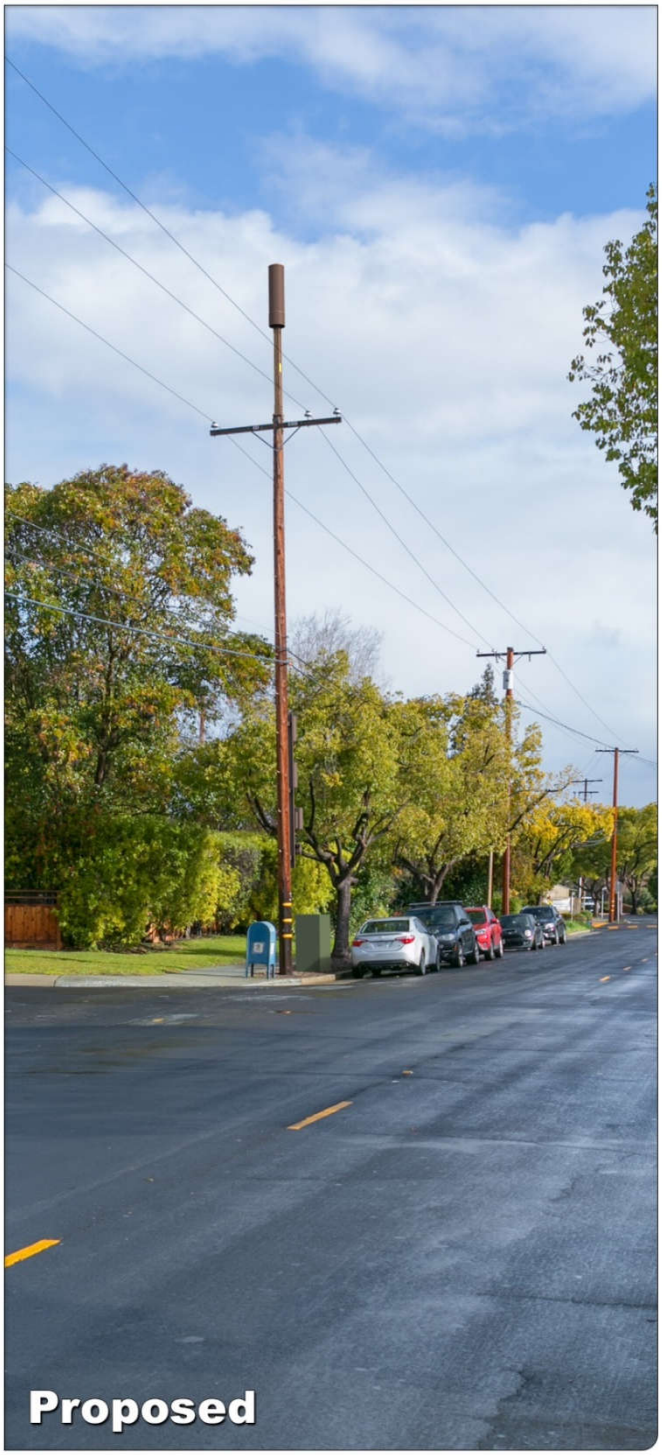
Verizon Wireless is seeking feedback on both the configuration of the pole mounted equipment as well as the shade of brown to be used for the equipment.

Attachment H – Photo Simulations of Configurations

Configuration 1: Ground-mounted emergency battery

Version Date: January 25, 2017





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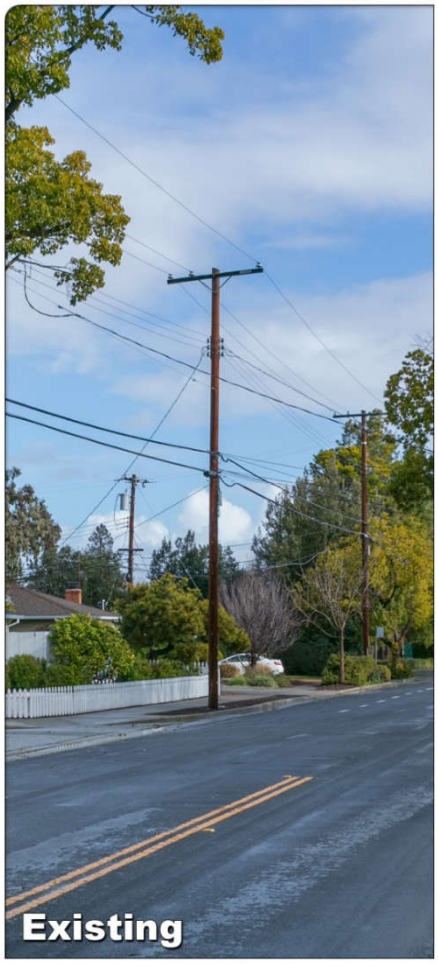
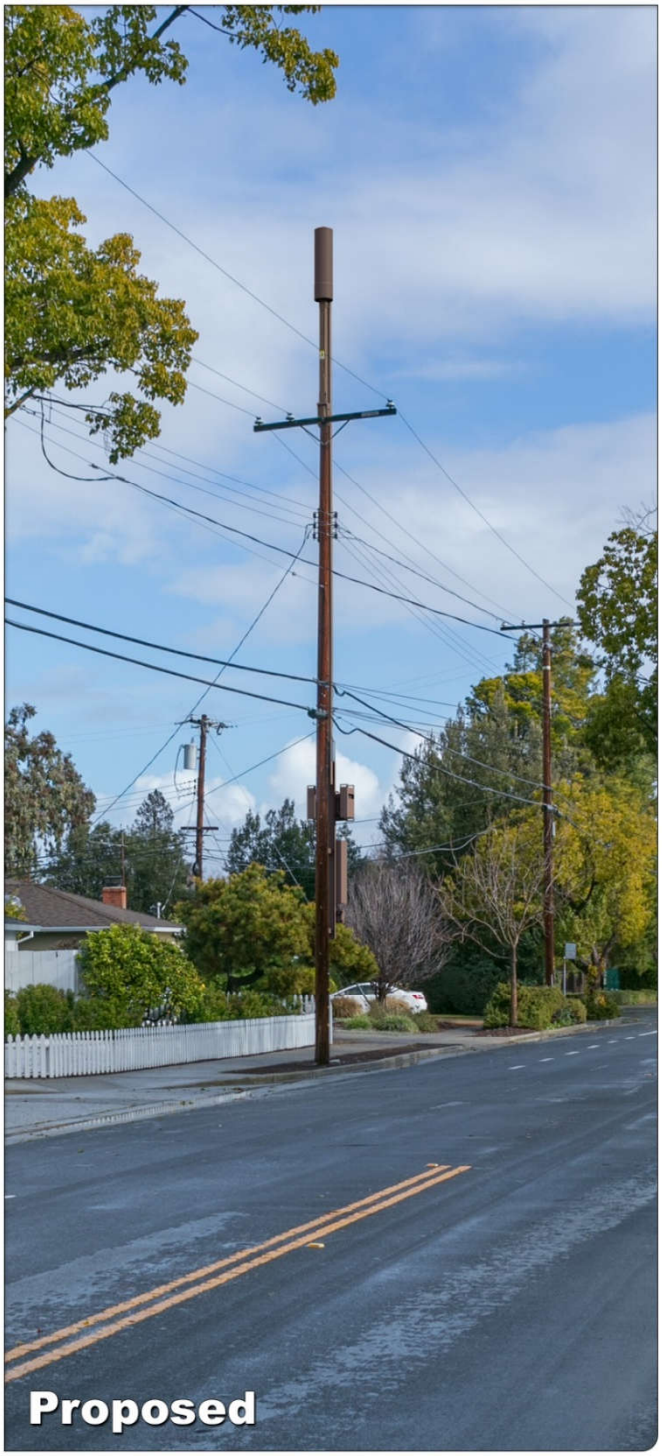
Configuration 2: Pole-mounted emergency battery

Version Date: January 25, 2017





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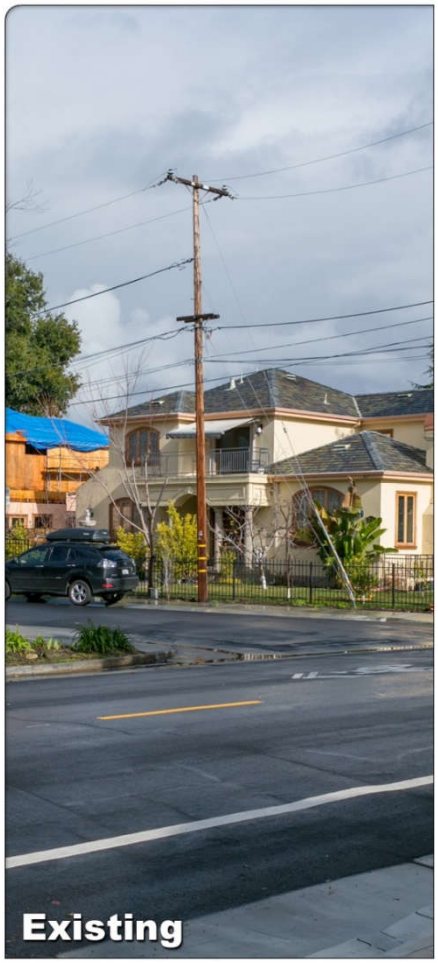
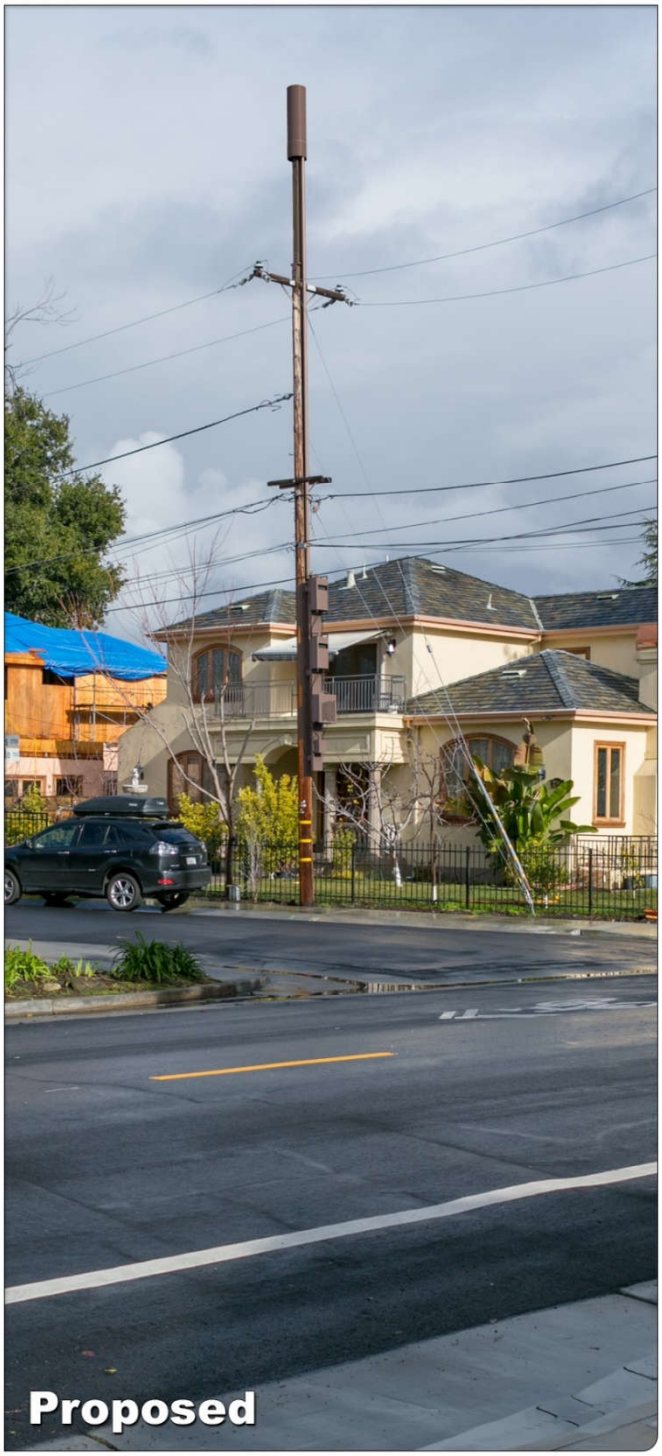
Configuration 3: Pole mounted equipment only. No emergency battery.

Version Date: January 25, 2017





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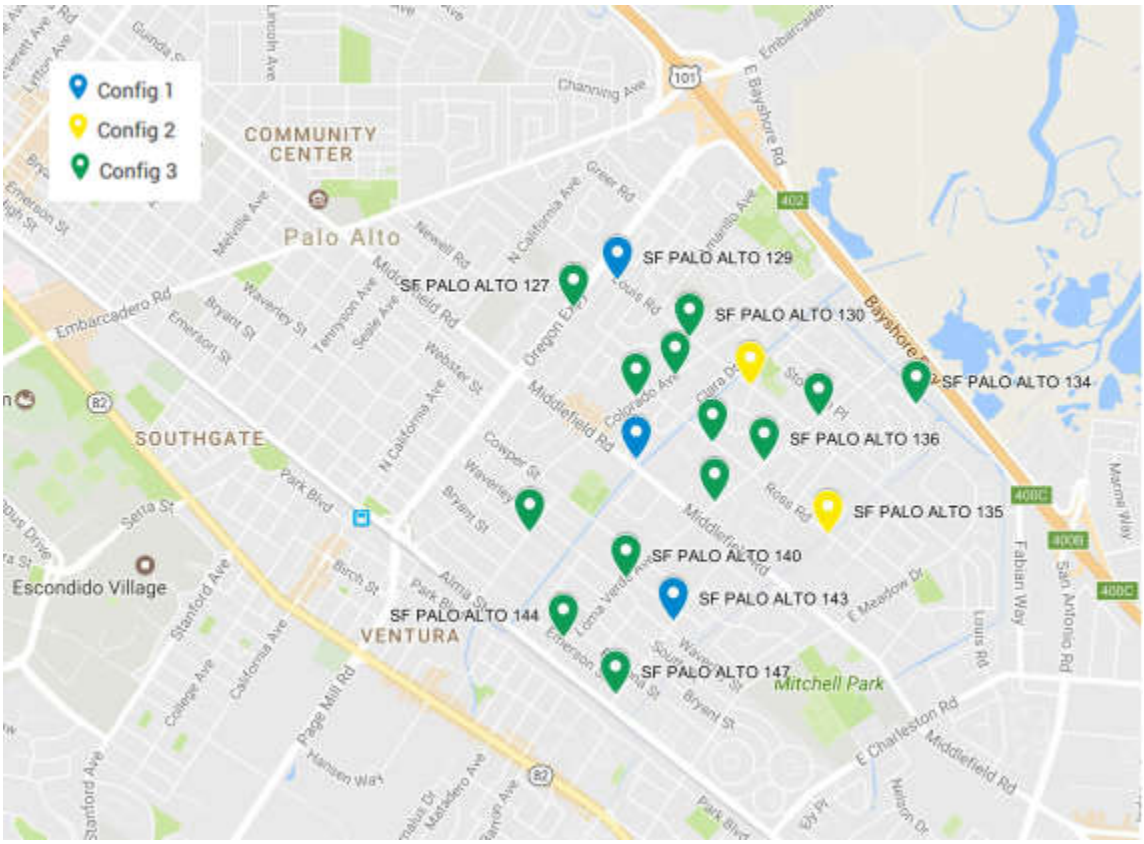
Attachment I – Cluster 1 Configurations

Cluster 1 contains 18 proposed small cell nodes.

Node	Right-of-Way Adjacent Address	Adjacent APN	Structure Type	Configuration	CPAU Pole #	Adjacent APN Zoning
PALO ALTO 127	820 Warren Way	12730045	Wood Utility Pole	Config 3	3112	R-1
PALO ALTO 129	2490 Louis St	12730062	Wood Utility Pole	Config 1	3121	R-1
PALO ALTO 130	2802 Louis St	12728046	Wood Utility Pole	Config 3	2461	R-1
PALO ALTO 131	3120 Louis St	12726067	Wood Utility Pole	Config 2	3315	R-1
PALO ALTO 133	925 Loma Verde	12724023	Wood Utility Pole	Config 3	2857	R-1
PALO ALTO 134	3409 Kenneth Dr	12709028	Wood Utility Pole	Config 3	2964	R-1 (7000)
PALO ALTO 135	795 Stone Lane	12747001	Wood Utility Pole	Config 2	3610	R-1 (8000)
PALO ALTO 136	3191 Manchester Ct	12758024	Wood Utility Pole	Config 3	3298	R-1
PALO ALTO 137	795 Stern Ave	12752031	Wood Utility Pole	Config 3	3351	R-1
PALO ALTO 138	836 Colorado Ave	12727063	Wood Utility Pole	Config 3	2479	R-1
PALO ALTO 139	752 Colorado Ave	12734115	Wood Utility Pole	Config 3	2489	R-1
PALO ALTO 140	450 Loma Verde	13215077	Wood Utility Pole	Config 3	3971	R-1
PALO ALTO 141	2801 South	13214023	Wood Utility Pole	Config 3	2669	R-1
PALO ALTO 143	3299 Waverley	13215017	Wood Utility Pole	Config 1	3867	R-1
PALO ALTO 144	201 Loma Verde Ave	13248015	Wood Utility Pole	Config 3	1506	RM-30
PALO ALTO 145	734 Loma Verde Ave	12764001	Wood Utility Pole	Config 3	3288	R-1 (7000)
PALO ALTO 146	2901 Middlefield Rd	12735194	Wood Utility Pole	Config 1	7647	R-1
PALO ALTO 147	181 El Verano Ave	13227072	Wood Utility Pole	Config 3	1494	R-1

Attachment J –Map of Cluster 1 Configurations

Eighteen (18) proposed nodes from Cluster 1 are identified, along with their proposed Configurations 1, 2 and 3.



Config 1: Emergency battery backup critical, placed in ground-mounted box adjacent to pole.

Config 2: Emergency battery backup essential, but no space; small battery placed on pole.

Config 3: Emergency battery backup currently not required. No emergency battery.

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Attachment K – Proposed Paint Samples

Pole-Mounted Equipment (all Kelly Moore durable metal paint)

- Railroad Ties (KMA67)
- Log Cabin (KMA76)
- Clay Bath (KM4595)

Ground-Mounted Equipment (all Kelly Moore durable metal paint)

- Lone Pine (KM4798)
- Acanthus Leaf (KM4796)

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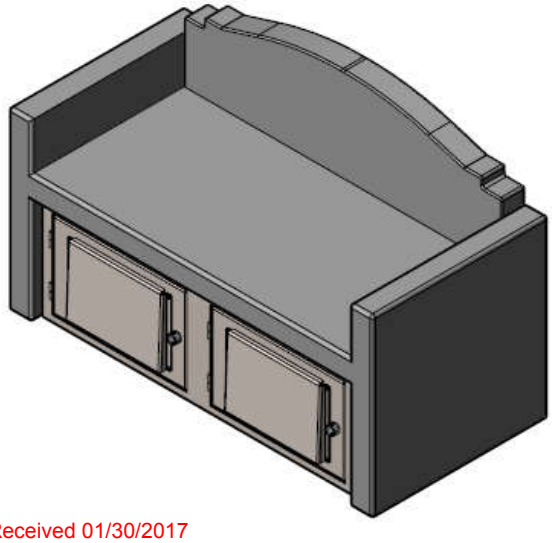
Attachment L – Proposed Ground Cabinet Stealth Options

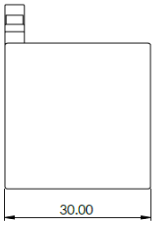
Landscaping

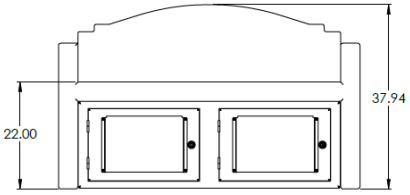
Ground-mounted emergency battery equipment with landscaping.

Street Furniture Options

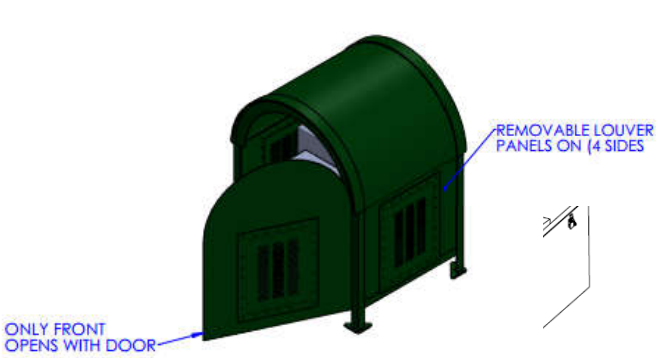
Concrete Bench

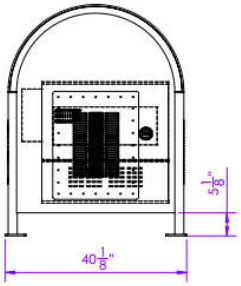


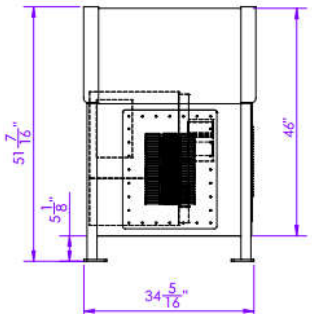




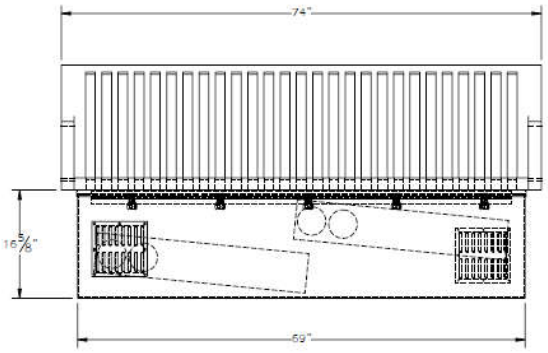
Relay Mailbox







Metal Bench



Garbage Can

Art-Wrapped Cabinets

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Ground-mounted emergency battery cabinet without wrap.

Examples of Existing Art Wraps (located Downtown Walnut Creek)

Please note that these cabinets may differ in size than the proposed emergency battery cabinet, which is placed on a 32" x 32" concrete pad, with a 54" tall cabinet.

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Attachment M – Proposed Model Small Cell Location

Photo of CPAU Approved Location

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