4 PROJECT DESCRIPTION

4.1 Introduction

On February 5, 2013, Crown Castle NG West Inc.~~, formerly NextG Networks of California Inc.,~~ (Crown Castle or the Applicant) filed an application (13-02-007) which included a Proponent's Environmental Assessment (PEA) with the California Public Utilities Commission (CPUC) for an Authority to Construct and for Deviation from Public Utilities Code Section 320 for the San Mateo County Project (proposed project). On September 6, 2013, the Applicant filed an amended application and an updated PEA to reflect proposed changes for the original filing. Accordingly, the amended application and PEA describes the proposed project.

The proposed project would consist of installation of distributed antenna systems (DAS) network facilities, including fiber optic cable, antennas, nodes, and related facilities along approximately 14.22 miles of existing highway rights-of-way (ROW), primarily along Highway 1 (Hwy 1) in San Mateo County, California (Figure 4-1, Regional Map). Approximately ~~12.8~~ 10.76 miles of the fiber-optic cable would be placed aerially on existing utility poles, and approximately ~~1.4~~ 3.46 miles of new conduit would be installed underground within existing ROWs.

4.2 Project Objectives

The Applicant provides point-to-point radiofrequency (RF) transport and backhaul services that augment wireless broadband services in dense urban and isolated suburban/rural areas for its wireless carrier customers. The Applicant provides these services over non-switched, digital fiber-optic communications networks referred to as DAS networks.

The proposed project would expand wireless broadband services in rural, coastal areas of San Mateo County. According to the Applicant, the primary objectives of the proposed project are:

- To expand the wireless voice and broadband services provided by Crown Castle's customer, Verizon Wireless, to an unserved/underserved rural area along a heavily traveled section of Hwy 1 in San Mateo County, thereby generally improving the area's communications and data system.
- To enhance public safety by providing expanded and more reliable communications access to emergency services.
- To provide a means to more efficiently expand wireless service by other carriers in this area through co-location or joint use of certain facilities; this could also increase competition among existing telecommunications carriers—an outcome that would be consistent with well-established California and federal telecommunications policy.

- To expand and enhance California's national and international telecommunications access.
- To enable existing telecommunications networks to better exchange traffic across California and improve reliability using high-quality, state-of-the-art technology.

4.3 Project Location

The approximately 14.22-mile route along Hwy 1, on which the proposed project would occur, would be located within a public ROW or existing utility easement within unincorporated San Mateo County (Figure 4-2(b), ~~Project~~ Vicinity Map). In addition to the County of San Mateo, a spur line of the proposed project would run under and adjacent to the entrance road to the Año Nuevo State Park for approximately 900 feet to the location of an antenna node ~~the proposed project alignment would traverse an existing 0.5-mile utility easement in Año Nuevo State Park~~.

Table 4-1 shows the length of various segments of the proposed project defined by the ROW.

Table 4-1
Proposed Project ROW

Segment	Aerial Portion (mile)	Underground Portion (mile)	Total ROW (mile)
Existing Hwy 1 ROW	6.90	~~1.4~~ 3.29	~~8.3~~ 10.19
Existing local public road ROW	~~4.0~~ 3.10	0.00	~~4.0~~ 3.10
Existing utility easement ROW	~~1.9~~ 0.76	0.17	~~1.90~~ 0.93
Total ROW	**~~12.8~~ 10.76**	**~~1.4~~ 3.46**	**14.22**

The alignment would generally follow Hwy 1 beginning at the San Mateo County–Santa Cruz County line and continue in a northwesterly direction along Hwy 1 for a distance of approximately 7.7 miles where it would transition onto Pigeon Point Road. It would follow Pigeon Point Road for a distance of approximately 1.6 miles to a currently under-construction Verizon Wireless macro cell tower. The segment along Hwy 1 would be aerial cable placed on existing utility poles and some new buried conduit (Figures 4-2a(b) and 4-2b(b)).

From the intersection of Hwy 1 and Pigeon Point Road, the alignment would continue ~~to the west along Pigeon Point Road, past the Pigeon Point Lighthouse and north to the Hwy 1 ROW. It would then continue to the~~ north along the Hwy 1 ROW for a distance of approximately ~~2.1~~ 2.8 miles to Bean Hollow Road. The alignment would depart Hwy 1 and continue on existing utility poles north along Bean Hollow Road for a distance of approximately 1.3 miles to an existing Verizon Wireless cellular tower on the Bay Flower Company property east of the road.

Land uses surrounding the project alignment are rural and sparse, including agricultural (i.e., farms, ranches, and nurseries), recreation (i.e., Año Nuevo State Park, camping/glamping,[1] public parking for costal access), and small commercial uses and rural residences.

4.4 Project Components

The proposed project would consist of:

- Installing a total of 10 antennae, pole extenders, and associated equipment, two on each of five node poles (all existing utility poles).
- Installing 14.22 miles of fiber-optic cable (~~12.8~~ 10.76 miles across approximately ~~308~~ 258 existing utility poles and ~~1.4~~ 3.46 miles underground).
- Installing guy wires and anchors on up to 70 existing utility poles, pending further engineering analysis and structural testing.
- Potentially replacing up to 14 existing utility poles to accommodate the new stress loads, pending further engineering analysis.

4.4.1 Antennae and Associated Equipment on Node Poles

The following components would be attached to each of the five node poles:

- Antenna(e), two KS 84010525 panel antennae (23 inches tall, 10 inches wide, and 5.5 inches deep) would be mounted at the top of each node pole.
- Battery back-up unit, measuring 36.88 inches tall, 30.25 inches wide, and 16 inches deep, would be mounted on each node pole at a height of approximately 8 feet above the ground.
- RF disconnect switch, measuring 10 inches tall, 8 inches wide, and 5 inches deep, would be mounted on each node pole at a height of approximately 8 feet above the ground.
- Electric meter, measuring 26 inches tall, 12 inches wide, and 6 inches deep, would be mounted on each node pole at a height of approximately 8 feet above the ground.
- Pole extenders measuring 7 feet in height would be attached to the top of node poles to extend the antenna an adequate distance above the power lines. The antennae would be attached to the top of the extenders.

These items would be mounted on existing utility poles, the height of which would be increased by a total of 9 feet by the addition of the pole-top extenders and antennae.

[1] Glamping = Glamorous camping.

4.4.2 Fiber-Optic Cable

Approximately ~~14.2~~ 14.22 miles of new fiber-optic cable would be installed generally along Hwy 1. Approximately ~~12.8~~ 10.76 miles would be placed aerially on existing utility poles, and approximately ~~1.4~~ 3.46 miles of new conduit and cables would be installed underground.

4.4.3 Guy Wires and Anchors on Poles

Approximately 70 guy wires would be installed at existing guy wire locations when adding lines or other facilities that increase loads on poles. A guy wire is a tensioned cable designed to add stability to a free-standing structure such as a pole. One end of the guy wire is attached to the structure, and the other is anchored to the ground at a distance from the structure's base. Where anchors require replacement, the new anchor rod would be 7 to 10 feet long with a diameter of 0.5 to 1.25 inches. Existing anchors would be used where they could accommodate an additional guy wire.

4.4.4 Replacement of Existing Poles

Approximately 14 existing poles may need to be replaced due to the condition of the poles and the increased stress caused by adding more fiber-optic cable. If pole replacement is needed, the replacement poles would be of the same type and installed into the exact location as the existing poles. Exactly which poles, if any, to be replaced is unknown at this time as the load testing is not complete.

4.5 Right-of-Way Requirements

The project would utilize existing road or utility ROWs which are of sufficient width to accommodate the proposed project; therefore no new ROWs would be acquired for the proposed project.

4.6 Pre-Construction Environmental Training

Pre-construction environmental training would be conducted for all construction employees prior to the start of ground-disturbing activities. The purpose of this training would be to inform the construction supervisor, workers, and inspectors of any potential sensitive resources that may occur along the proposed project alignment, to explain these resources' importance and sensitivity to disturbance, to review regulatory protections accorded to these resources, and to describe the construction protocols and mitigation measures adopted for the proposed project. Training would identify individual responsibilities and communication procedures regarding these resources. Pre-construction training also would address construction practices, traffic controls, and health and safety practices.

4.7 Construction Activities

Construction of the proposed project would include overhead installation of antennae, associated equipment, and fiber-optic cable on existing poles; installation of guy wires and anchors on existing poles; underground installation of fiber-optic conduit and cables; and replacement of existing poles. Temporary work areas would include pole sites for overhead fiber-optic installation and replacement of approximately 14 poles, and entry and exit pits associated with underground fiber-optic installation within existing roadways.

Aerial Installation

The basic method of installation for aerial facilities would be to install suspension clamps at each pole. Cables would then be supported (lashed) to high-strength galvanized suspension strands held in place by the suspension clamps. The strand is high-tensile steel and would be placed under tension to control sag. Tension would be maintained at the ends of the strand, and at all corners, by "downguys" anchored into the ground.

Standard aerial construction techniques and typical two-axle rubber-tire vehicles would be used to attach antennae and associated equipment to most utility poles. Basic equipment required for aerial installations includes bucket trucks and cable reel trucks or cable trailers. At least one crew and one bucket truck would travel the pole line alignment. The cable reel truck would carry spooled fiber that would be unwound for installation on the existing poles. The two-axle truck equipment is highly maneuverable and would use existing improved areas for turning around or parking in areas such as existing roads, field access aprons, driveway aprons, or farm roads. The anchors are augured or driven directly into the ground using hand equipment, and the guy wire is attached and tensioned. An area of approximately 10 feet by 10 feet would be disturbed to install the anchors for the guy wires. In areas where access could be an issue (e.g., areas with sensitive resources (e.g., creek crossings) or dense vegetation), crews would walk to the site, and installation activities would be completed by hand. In these areas, use of a tool similar to an air gun would allow one crew member to shoot a string over the resource or dense vegetation to a crew member on the other side to create a pull line for fiber-optic line installation.

For node poles, pole extenders measuring 7 feet in height would be attached to the top of node poles to extend the antenna an adequate distance above the power lines. The antennae would be attached to the top of the extenders.

Grounding would occur at the first, last, and every fifth pole by driving a copper rod into the ground.

Vegetation Trimming and Trampling

In some locations it would be necessary to trim vegetation to install the fiber-optic cable on the existing utility poles. Although Pacific Gas and Electric (PG&E), the power company that owns the poles, is required under General Order 95 to keep the encroaching vegetation trimmed as part of routine maintenance, additional trimming could be necessary in some locations.

Vegetation trimming could be necessary to accommodate the new cable to be attached at a location lower on the pole than the existing lines. It would not be necessary to remove trees, but branches and limbs may need to be trimmed in some locations. The use of utility bucket trucks would allow the workers to access the pole attachment locations without the need for vehicle access to the base of the pole, reducing the need for vegetation trimming. The specific locations of any vegetation trimming would not be known until the contractor is on site to conduct the work; it can be assumed that trimming would be minimal based on the proposed construction methods.

In some locations, the rubber-tired vehicles would be expected to trample existing brushy vegetation. The bucket trucks may need to drive on the vegetation or place their outriggers on vegetation to gain access to the poles.

Underground Installation

Existing Utility and Drainage Facilities

Prior to construction of underground components of the proposed project (and as part of standard practice for excavation projects in California), the Applicant and/or its contractor would conduct a check for underground utilities using the Underground Service Alert service. This service marks the location of other utilities so that the construction contractor can avoid conflicts, maintain service, and/or temporarily relocate and replace any affected lines, in coordination with their owners.

Given the California Department of Transportation (Caltrans) may have facilities not registered with Underground Service Alert, the Applicant and/or its contractor would also conduct a visual inspection to identify other features, such as culvert undercrossings and irrigation lines, that would require avoidance, temporary relocation, or replacement. For portions of the horizontal directional drilling (HDD) that would cross culvert undercrossings along Hwy 1, the construction contractor would advance a core through the highway shoulder to determine the depth to the drainage crossing, and would direct the HDD in a manner that avoids damage to Caltrans drainage infrastructure.

Horizontal Directional Bore

Horizontal directional boring allows new conduits to be installed to the desired depth without surface disturbance along the alignment. It is expected that all of the new buried conduit would be installed using horizontal directional drilling methods. Bore entry and exit pits measuring approximately 2 feet by 6 feet and 3 to 5 feet deep would be excavated by a backhoe. A horizontal directional bores machine would drill a horizontal pilot hole along the designed cable alignment and at a depth of 3 to 5 feet below the ground surface. Once the pilot bore string reaches its receiving pit, the conduit would be attached to the end. The pilot pipe would then be pulled back to the bore machine thereby installing the conduit. The conduits would be spliced together or an access vault (see below) would be installed. The typical bore lengths would be approximately 200 to 400 feet in length.

Small areas of disturbance measuring approximately 20 by 40 feet would be needed at approximately 200-foot to 400-foot intervals to accommodate the bore machines, to allow for connection of the conduits and for the installation of access vaults. The excavation would be 2 feet by 6 feet, as described above, but some temporary surface disturbance beyond that would be expected from the vehicle maneuvering and workers. Water trucks are not anticipated to be required for dust suppression because horizontal directional drilling, the only activity that would involve appreciable soil excavation and stockpiles, would use directional bore machines that have water on board that would be used for dust control, if necessary.

The bore machine would use a mixture of water and fine clay (usually bentonite) to help lubricate the pilot pipe and keep the hole drilled open. The water and clay would be mixed on site in a mixer attached to or as part of the bore machine. Earth cuttings from the bore hole and the water/clay mixture returns to the bore entry pit where it would be pumped into a receiving tank. The mixture would be filtered for reuse if possible or stored in a tank until it could be discarded in a local landfill approved to receive the material.

Installation of Cable into Conduit

Once the conduit system is installed, the fiber-optic cable would be pulled or blown into the conduits. The installation would be accomplished using a series of hydraulic pullers consisting of a main-line puller and sufficient intermediate assist pullers to ensure smooth pulling within specified tension restrictions. First, the pull line would be attached to a plug that is pushed through the conduit by air pressure. When the plug emerges at the end of the conduit section or access point, the pull line would be attached to the cable through a swivel to prevent the cable from twisting during the pulling operation. Then the pull line would be pulled back though the conduit section, threading the cable through the conduit. The main-line puller would be equipped with a tension

limiter and a tension monitor to provide an accurate record of actual pulling tensions encountered. These methods would be used to pull the cable from one handhole to the next. It is sometimes necessary to excavate temporary assist points to facilitate cable installation. In such cases, an excavation approximately 2 feet wide, 3 feet long, and 3 feet deep would be dug to provide access to the conduit; this excavation would be backfilled once the cable is installed.

Trenching

A small trench approximately 10 feet long, 2 feet deep, and 1 foot wide would be required to install the fiber optic line from a pole adjacent to Pigeon Point Road to an existing junction box.

Surface Restoration

Site cleanup and surface restoration would be performed promptly following conduit and cable installation. Cleanup would include removing debris and restoring original surfacing and contours. Any disturbed areas would be returned to their original or better condition.

Installation of Access Vaults

To allow for cable-placing assist locations, cable splice locations, and future access to the buried conduits and fiber, buried access vaults (i.e., handholes) would be placed along the alignment. Once installation is complete, the handholes would be accessed only rarely for maintenance or cable replacement. Each handhole would typically house 80 to 100 feet of cable slack.

Each handhole would be equipped with a traffic-rated lid, even if it would be out of the path of traffic. The lid may be visible at the surface or may be buried just below the surface. Handholes are sized to accommodate pulling fiber through conduits and would be 2 feet by 3 feet. Generally, road shoulders or other easily accessible areas are the preferred locations for handholes. A handhole would be necessary at the beginning and end points of each underground section and ~~approximately 4 to 6 intermediate handholes would be placed within the alignment~~ at intervals of ~~approximately~~ between 300 ~~to~~ and 500 feet. These handholes would be installed as the final step in the horizontal directional drill process and installed into the same excavations that would be created as drill entry and exit points. No additional ground disturbance would be required for the handholes.

Splicing of Cable Ends at Access Points

The reels of cables would be spliced where necessary at access points. Appropriate lengths of excess (slack loop) fiber-optic cable—generally at least 30 feet—would be left at all splice locations to allow for cable expansion and contraction due to temperature and for any splicing

required in the future. The cable would be spliced in splice cases (i.e., protective encasements) in a cable, with sufficient slack allowed. The splices would be made with a profile alignment fusion splicing machine and protected by heat-shrink tubing.

Pole Replacement

It is estimated that as many as 14 existing poles may need to be replaced due to the condition of the poles and the increased stress caused by adding more fiber-optic cable. Exactly which poles, if any, to be replaced is unknown at this time as the load testing is not complete. The estimate of 14 poles to be replaced is based on past experience with similar projects. If pole replacement is needed, the replacement poles would be of the same type and installed within 3 to 5 feet of the existing pole to be replaced. The process entails installing the replacement pole, removing the existing utilities from the existing pole, reattaching the utilities. and removing the existing pole. In areas where the existing pole also support utilities of another carrier (e.g., AT&T, PG&E), that carrier is responsible for moving their utilities from the old pole to the new pole and removing the pole. Movement of said utilities could take anywhere from 3 to 6 months depending on the utilities maintenance schedule resulting in two poles being at that location during that that period of time. Where poles do not have shared facilities, the process would typically be completed within 1 work day. Each pole replacement would take 1 day to complete, so it is expected that a total of up to 12 work days (96 hours) of service interruption would take place.

A site of approximately 30 feet by 100 feet would be temporarily disturbed to remove the old pole and replace it with the new pole.

Traffic Controls

Because most of the construction of the project would occur within public road ROWs, traffic would need to be controlled and coordinated. Traffic control measures would conform to California Department of Transportation (Caltrans) specifications as presented in their *Traffic Manual*, Chapter 5, Traffic Controls for Construction and Maintenance Work Zones, available for viewing at http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/TMChapter5.pdf.

On Hwy 1, it would not be necessary to close any traffic lanes. However, road shoulders would be closed in some locations. For the underground section of the proposed project, construction activities would take place under or just off the existing road shoulder. These work areas would need to be cordoned off in accordance with Caltrans specifications. For the smaller county roads, such as Pigeon Point Road and Bean Hollow Road, it may be necessary to temporarily block one lane of traffic with at least one lane remaining open at all times. When it is necessary to block a

lane of traffic, flaggers would be used to direct traffic in the construction zone. Delays to motorists would be anticipated to typically average 1 to 2 minutes.

Access

Construction access would occur primarily within existing road or utility ROWs. No new access roads would be required for construction of the proposed project.

Temporary Construction Work Areas

Staging areas are not expected to be necessary for the proposed project. Contractors would be expected to utilize their existing yards for their equipment and transport the materials needed for the project to the site daily. Should staging areas be necessary on a limited basis, existing paved or improved sites would be used. One potential staging area, a commercial parcel located on the east side of Hwy 1 just south of Gazos Creek Road, has been identified. Part of the site is occupied by a restaurant, and the remainder of the site, including a former fuel station, is currently idle. The area is concrete and asphalt surface. Any staging activities at this location would be confined to the existing paved areas.

Minor, temporary ground-disturbing construction activities would be spread throughout the length of the proposed project alignment. As described above, there would be no grading activity, and ground excavations would be limited to the entry/exit pits, access vaults, hand holes required to install the underground portion of the fiber-optic cable, and replacement pole holes. Anchor rods would be driven directly into the ground without the need for excavation. All other activity would consist of staging and mobilization of construction crews and vehicles primarily in shoulders, turnouts, or driveways along Hwy 1 and local roads. Underground activities would occur entirely within the shoulder of the Hwy 1 ROW. Although aerial installation activities would primarily occur from existing road ROWs, the proposed project alignment deviates from existing road ROWs but remains within the existing utility ROW for a total of approximately 1.9 miles in various locations. In these locations, construction crews would access the poles on foot. Because all work would occur within existing overhead utility and road ROWs, new disturbances within previously undisturbed areas, if any, would be temporary (e.g., one growing season) and limited to small isolated patches leading to or around existing utility poles.

Table 4-2 provides the estimated work areas that would be required for construction activities. These area calculations are inclusive of potential ground disturbance from excavation, but primarily consist of vehicle and construction crew activity areas around existing utility poles and proposed entry/exit pits and vaults.

Table 4-2
Construction Activity – Estimated Work Area Requirements for the Proposed Project

Activity/Equipment Type	Work Area per Site				Number of Sites	Total Temporary Disturbance[2] (ac)	Total Permanent Disturbance (ac)
	Length (feet)	*Width (feet)*	*Square Feet*	*Acres*			
Overhead Activities							
Aerial cable installation crew	4	4	16	0.0004	~~308~~ 258	~~0.113~~ 0.103	0.000
Guy wire installation crew	10	10	100	0.002	111	0.207	0.000
Pole replacement crew	100	30	3,000	0.069	14	0.996	0.000
Underground Activities							
Directional bore crew and underground cable installation crew (includes entry/exit pits and underground vaults)	40	20	800	0.018	~~27~~ 61	~~0.496~~ 1.098	0.000
Buried vault and marker crew (included traffic rated lid at ground level and markers)	2	3	6	0.000138	~~7~~ 16	0.000	~~0.000964~~ 0.00221
					Total	**~~1.812~~ 2.404**	**~~0.001~~ 0.002**

Construction Equipment and Personnel

Table 4-3 lists the typical construction equipment that would be needed for the various construction activities and the estimated maximum hours of operation. These estimates are based on the following quantities and assumed average production rates.

- Horizontal directional boring: approximately ~~7,300~~ 18,269 linear feet, with 1 crew averaging 400 feet per day for ~~18~~ 46 days.
- Buried vault: approximately ~~6~~ 16 vaults to place, with 1 crew averaging 2 vaults per day for ~~3~~ 8 days.
- Pole Replacement: up to 14 poles may need to be replaced on the project. One crew can replace one pole per day.
- Cable placement:
  - Aerial: approximately ~~12.8~~ 10.76 miles (~~67,584~~ 56,813 linear feet) to place, with 1 crew averaging 1,600 feet per day for ~~42~~ 36 days.
  - Buried (into conduit): approximately ~~1.4~~ 4.125 miles (~~7,300~~ 18,269 linear feet) to place, with 1 crew averaging 2,000 feet per day for ~~4~~ 9 days.

[2] This disturbance calculation is conservative and includes physical ground disturbances other than excavation (no grading or vegetation clearing proposed) such as from overland travel or vehicle maneuvering.

Table 4-3
Equipment Requirements and Crew Size for the Proposed Project

Activity/Equipment Type	Equipment Requirements				Crew Size
	Use	*Default Horsepower*	*Hours per Day of Operation (Average)*	*Total Days*	
Aerial cable installation crew					*4*
Bucket truck	Access poles, string fiber, trim vegetation	200	8	~~42~~ 36	
1-ton supply truck	Haul materials/reels of conduit	200	6	~~42~~ 36	
Pole replacement crew					*5*
Crane	Lift, position poles	500	4	~~7~~ 12	
Backhoe	Excavate pole location	105	3	~~7~~ 12	
1-ton supply truck	Haul materials	200	6	~~7~~ 12	
Pickup truck	Transport construction personnel	150	3	~~7~~ 12	
Directional bore crew					*4*
Bore machine	Excavate tunnel	115	8	~~18~~ 46	
Backhoe	Excavate entry and exit pits	105	3	~~18~~ 46	
Generator	Operate power tools	50	6	~~18~~ 46	
1-ton supply truck	Haul materials	200	6	~~18~~ 46	
Underground conduit/cable installation crew					*5*
Cable truck/main-line puller	Hold spools of cable	200	8	4 9	
Compressor	Operate air tools	50	8	4 9	
Generator	Operate power tools	50	8	4 9	
Backhoe	Excavate trenches	105	2	4 9	
1-ton supply truck	Haul materials/reels of conduit	200	6	4 9	
Buried vault and marker crew					*5*
Backhoe	Excavate trenches	105	8	~~3~~ 8	
1-ton supply truck	Haul materials	200	6	~~3~~ 8	

It is anticipated that up to 20 workers will be employed during different construction phases of the project, consisting of multiple 4- to 5-person crews.

Construction Schedule

Construction of the proposed project would commence after securing all required approvals and permits. The construction of all project components would be expected to last approximately ~~2 months~~ 10 weeks and would require using some crews working simultaneously on different

project components. Construction would generally occur between 7:00 a.m. and 6:00 p.m. on weekdays and would comply with any work time frame restrictions that Caltrans or San Mateo County may propose. Construction could take place during any season of the year but work would not be conducted during substantial rain events.

Table 4-4 provides the proposed schedule for construction of the proposed project.

Table 4-4
Estimated Duration of Construction Tasks for the Proposed Project

TASK	DURATION (work days)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Project Initiation Training	1										
Aerial Cable Installation	42 36										
Utility Pole Replacement	12										
Underground Conduit Installation (HDD)	18 46										
Underground Vault and Marker Installation	3 8										
Underground Cable Installation	4 9										

HDD = horizontal directional drilling

4.8 Operation and Maintenance

Following construction of the proposed project, operations and maintenance activities would be minimal. Operation is limited to the operation of the new fiber-optic line and associated equipment installed to the existing utility poles.

Since the proposed project would be located within an existing utility ROW, there are as-needed maintenance activities, similar to those proposed, already occurring at pole locations and within the utility ROW to maintain these existing utilities. Maintenance activities associated with the proposed project would consist of periodic (typically annually) inspection by patrol in a pickup truck of the project route facilities to determine if repairs and/or vegetation trimming would be required. If repairs are necessary, such as reattaching a loose or detached cable from a pole, these activities would be similar to cable/pole installation activities as described above in Section 4.7 Construction Activities. Since General Order 95 does not require vegetation clearance for fiber-optic lines, tree trimming would be limited to situations where a tree creates a hazardous condition to the cable or a utility pole. Therefore, impacts associated with maintenance would

generally be similar to overhead construction-related impacts; however, the duration, intensity, and/or frequency of said activities would be substantially less.

4.9 Applicant Proposed Measures

The PEA details project protocols that would be followed during project-related activities (ICF 2013). Project protocols are specific to environmental issue areas and are herein termed Applicant Proposed Measures (APMs). Table 4-5 lists APMs proposed as project design features. These APMs are analyzed as part of the proposed project.

Table 4-5
Applicant Proposed Measures

APM Number	Description
	Aesthetics
APM-AES-1	Keep construction and staging areas orderly, free of trash and debris, and restore areas disturbed by project construction along the proposed route to their pre-project condition.
APM-AES-2	• Identify and comply with local regulations and requirements concerning architectural design; • Design project facilities to be unobtrusive and to not conflict with the character of the surrounding setting; restore conduit installation sites to pre-construction conditions; and • Prior to construction, consult with the local agencies associated with each project area regarding the appropriate architectural design practices that will be implemented before, during, and after construction.
APM-AES-3	As part of its standard construction operating procedure, ensure that construction lights will be directed away from the visual field of motorists and pedestrians along any streets or right-of-ways.
	Air Quality
APM AQ-1	*Implement BAAQMD basic construction measures to reduce dust emissions* • Crown Castle will require all construction contractors to implement the following BAAQMD emission reduction measures to reduce dust emissions. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.
APM AQ-2	*Implement BAAQMD basic construction measures to reduce exhaust emissions* Crown Castle will require all construction contractors to implement the following BAAQMD emission reduction measures to reduce exhaust emissions. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
	Biological Resources
APM-BIO-1	*Conduct spring surveys for special-status plants within the project area* • Prior to construction, a qualified botanist will complete spring surveys for special-status plants within

Table 4-5
Applicant Proposed Measures

APM Number	Description
	the project area to determine the presence or absence of special-status plants. The survey will be completed by qualified botanists and will be conducted during the appropriate period(s) necessary to observe special-status plants known to occur in the region. • If a population of a special-status plant species occurs within the project area, the population will be clearly staked and flagged in the field by a qualified botanist prior to construction so the population can be avoided. If the population cannot be avoided during construction, Crown Castle will minimize impacts by reducing the work area to the smallest area necessary to complete the work. Crown Castle will conduct project activities and necessary ground disturbance in a manner that is consistent with the successful reestablishment of the species to the extent feasible. The specific actions necessary will depend on the biology of the species, and will be determined through consultation with the USFWS and CDFW. Generally actions include waiting for the plant species to go to seed and collecting the seed for future planting and saving the top 6 inches of top soil (which contains the seed bank) separate from other excavated soil.
APM-BIO-2	*Conduct a preconstruction nesting survey to minimize impacts to nesting birds and raptors (February through August)* • If the proposed project is completed outside of the nesting season of birds, no additional measures will be necessary. • If construction will take place during the nesting season (generally February through August) Crown Castle will conduct preconstruction nesting bird surveys. If an active nest is identified during the surveys, Crown Castle, in consultation with CDFW and USFWS, will establish a no-construction zone until the breeding season is completed or subsequent bird/raptor surveys confirm that all offspring have fledged and no new nests have been established. Generally, these no construction zones are 50 feet for passerine birds and 250 feet for raptors.
APM-BIO-3	*Conduct preconstruction survey to minimize impacts to wintering monarch butterflies for construction in late fall and winter months* • If the proposed project is scheduled to occur during the late fall and winter months and trimming of eucalyptus trees is required, a biologist will conduct a preconstruction survey to determine if the trees that require trimming and the surrounding trees support overwintering clusters of monarch butterflies. If clusters of monarch butterflies are present, Crown Castle, in consultation with CDFW, will establish a no construction zone until after the monarch butterflies have migrated. Generally, this no construction zone is 30 feet from wintering monarch butterflies.
APM-BIO-4	*Measures to minimize impacts to California red-legged frogs, San Francisco garter snakes, and western pond turtles* • Work should be avoided from October 16 (or the first measurable rainfall of 1 inch or greater) to May 14. If work cannot be avoided during this period then it is recommended that a qualified biological monitor be present for all ground-disturbing activities. • It is recommended that a qualified biologist familiar with California red-legged frogs, San Francisco garter snake, and western pond turtle conduct a preconstruction survey immediately prior to construction in areas where ground disturbance will occur. During the preconstruction survey, the biologist will also look for and identify burrows that could be used by California red-legged frogs. These areas will be flagged (as practical) for avoidance. The biologist will remain on site for the duration of any construction activities involving excavation or the use of heavy machinery or equipment. • Prior to work the construction crew will receive worker environmental awareness training. Training will include review of environmental laws and protective measures that must be followed by all personnel to reduce or avoid effects on protected species during construction activities. • Any holes, trenches, pits, and/or tanks that are left open overnight will either be covered to prevent entry or one side will be sloped to allow wildlife to escape. Open holes, trenches, pits, and/or tanks

Table 4-5
Applicant Proposed Measures

APM Number	Description
	left overnight will be checked by a qualified biologist at the start of construction each day to determine whether trapped wildlife are present. If wildlife are present, they will be removed by the biologist before the hole, trench, or pit is filled. • Plastic monofilament netting (erosion control matting) or similar material containing netting will not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds. • Handling of California red-legged frogs is prohibited without a valid federal take permit and handling of San Francisco garter snakes is prohibited without a valid federal take permit and a CESA Section 2081 Incidental Take Permit. Any California red-legged frogs or San Francisco garter snakes observed on the work site will be allowed to move offsite on their own. • If California red-legged frogs, San Francisco garter snakes, and western pond turtles are observed on or adjacent to the work site, and are in danger of injury, construction in the vicinity will cease until no danger exists for California red-legged frogs or San Francisco garter snakes.
Cultural Resources	
APM-CUL-1	• If buried cultural resources, such as chipped or ground stone, historic debris, building foundation, or human bone, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate measures in consultation with the CPUC, State Historic Preservation Officer, and other appropriate agencies. • In the event that fossil remains are encountered, either by the cultural resources monitor or by construction personnel, qualified paleontological specialists will be contacted. Construction within 100 feet of the find in non-urban areas and 50 feet in urban areas will be temporarily halted or diverted until a qualified vertebrate paleontologist examines the discovery.
Greenhouse Gas Emissions	
APM GHG-1	*Implement BAAQMD Best Management Practices to reduce GHG emissions* To ensure that short-term GHG emissions are reduced as much as feasible and the proposed project does not result in a considerable contribution to GHG levels, Crown Castle will require all construction contractors to implement the following GHG emission reduction measures to the extent they are feasible. • Using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15% of the fleet. • Recycling or reusing at least 50% of construction waste or demolition materials.
Hazards and Hazardous Materials/Fire Safety	
APM-HAZ-1	• Ensure proper labeling, storage, handling, and use of hazardous materials in accordance with best management practices and the Occupational Safety and Health Administration's HAZWOPER requirements. • Ensure that employees are properly trained in the use and handling of hazardous materials and that each material is accompanied by a material safety data sheet. • Any small quantities of hazardous materials stored temporarily in staging areas will be stored on pallets within fenced and secured areas and protected from exposure to weather. Incompatible materials will be stored separately, as appropriate. • All hazardous waste materials removed during construction will be handled and disposed of by a licensed waste disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, to the extent necessary to ensure the area can be safely traversed. • Significant releases or threatened releases of hazardous materials will be reported to the appropriate agencies.

Table 4-5
Applicant Proposed Measures

APM Number	Description
	Hydrology and Water Quality
APM-HYD-1	Prior to non-storm discharges into surface waters, provide documentation of obtaining all necessary and applicable approvals, including the following: • Implementation of appropriate Best Management Practice (BMP's) to minimize the potential for storm-water pollutants. These BMPs may include, but not necessarily be limited to, the utilization of settling ponds or screens to reduce suspended sediment loads
APM-HYD-2	Erosion Controls: • Excavated or disturbed soil will be kept within a controlled area surrounded by a perimeter barrier that may entail silt fence, hay bales, straw wattles, or a similarly effective erosion control technique that prevents the transport of sediment from a given stockpile. • All stockpiled material will be covered or contained in such a way that eliminates off-site runoff from occurring. • Upon completion of construction activities, excavated soil will be replaced and the area restored to pre-construction conditions.
	Land Use
APM-LU-1	Submit written documentation, including evidence of review by the appropriate public works, planning, and/or community development agency for the applicable jurisdictions. This documentation will include the following: • Site plan showing the dimensions and location of the finalized alignment; • Evidence that the project meets all necessary requirements; • Evidence of compliance with design standards; • Copies of any necessary permits or conditions of approval; and • Records of any discretionary decisions made by of the applicable jurisdictions.
	Noise
APM-NOI-1	• Require construction contractors to comply with the construction-hour limitations and construction equipment standards set forth by each local jurisdiction. • All equipment will have sound-control devices no less effective than those provided on original equipment; • No equipment will have an unmuffled exhaust; • Construction equipment will be located as far from sensitive receptors (e.g., residences, schools, places of worship, and hospitals) as possible; and • If traffic control devices requiring electrical power are employed within 500 feet of sensitive receptors, the devices will be battery/solar powered instead of powered by electrical generators. In addition, implement a variety of measures to reduce noise levels from directional boring where noise levels of 60 dBA or greater will be experienced at sensitive receptor locations. For example: • Special mufflers can be applied to the boring rig exhaust; • Shielding can be erected between the noise source and the receptor; or • As an extreme measure, a temporary enclosure can be erected to house the boring operation. Implement all reasonable and customary noise reduction measures and post the name and telephone number of a person for the public to contact to resolve noise-related problems.
	Recreation
~~APM-REC-1~~	~~• Schedule construction to avoid peak use periods (e.g., weekends and holidays) for recreational facilities.~~ ~~• All ground surfaces will be restored as close to pre-project conditions as soon as possible or practicable.~~

Table 4-5
Applicant Proposed Measures

APM Number	Description
	Traffic
APM-TRA-1	• As deemed necessary by the applicable jurisdiction, the road encroachment permits may require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction. • Identify all roadway locations where special construction techniques (e.g., directional drilling or night construction) will be used to minimize impacts to traffic flow. • Develop circulation and detour plans to minimize impacts to local street circulation. This will include the use of signage and flagging to guide vehicles through and/or around the construction zone. • Schedule truck trips outside of peak morning and evening commute hours. • Limit lane closures during peak hours to the extent possible. • Use haul routes minimizing truck traffic on local roadways to the extent possible. • Include detours for bicycles and pedestrians in all areas potentially affected by project construction. • Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones. • Store construction materials only in designated areas. • Coordinate with local transit agencies for temporary relocation of routes or bus stops in work zones, as necessary.
APM-TRA-2	To avoid impeding emergency vehicle traffic around the construction activities, develop an Emergency Vehicle Access Plan that includes the following: • Evidence of advanced coordination with emergency service providers, including but not necessarily limited to police departments, fire departments, ambulance services, and paramedic services; • Emergency service providers will be notified of the proposed project locations, nature, timing, and duration of any construction activities, and will be asked for advice about any road access restrictions that could impact their response effectiveness; and • Project construction schedules and routes designed to avoid restricting movement of emergency vehicles to the best extent possible. Provisions to be ready at all times to accommodate emergency vehicles at locations where access to nearby properties may be blocked. Provisions could include the use of platings over excavations, short detours, and/or alternate routes.
APM-TRA-3	Prepare and implement a traffic safety plan and coordinate with local transportation and emergency response agencies to avoid potential roadway safety hazards.
APM-TRA-4	Limit all parking to right-of-way and pre-approved staging areas to address the increased parking demand created by construction activities.
	Utilities and Service Systems
APM-USS-1	Recycle and dispose of construction materials to minimize generation of solid waste resulting from construction activities.

Source: ICF 2013.

4.10 Key Permits and Approvals

Key permits and approvals presumed necessary for implementation of the proposed project are presented below (Table 4-6).

Table 4-6
Permits and Approvals Required for Construction

Agency	Permit/Approval
California Public Utilities Commission	Authority to Construct, and scenic highway deviation
California Department of Transportation	Encroachment Permit
San Mateo County Planning Department	Use Permit and Building Permit subject to Coastal Development Review

4.11 References

ICF International. 2013. Crown Castle Network San Mateo County Project, Amended Proponent's Environmental Assessment. Prepared for Crown Castle NG West Inc. August 2013.

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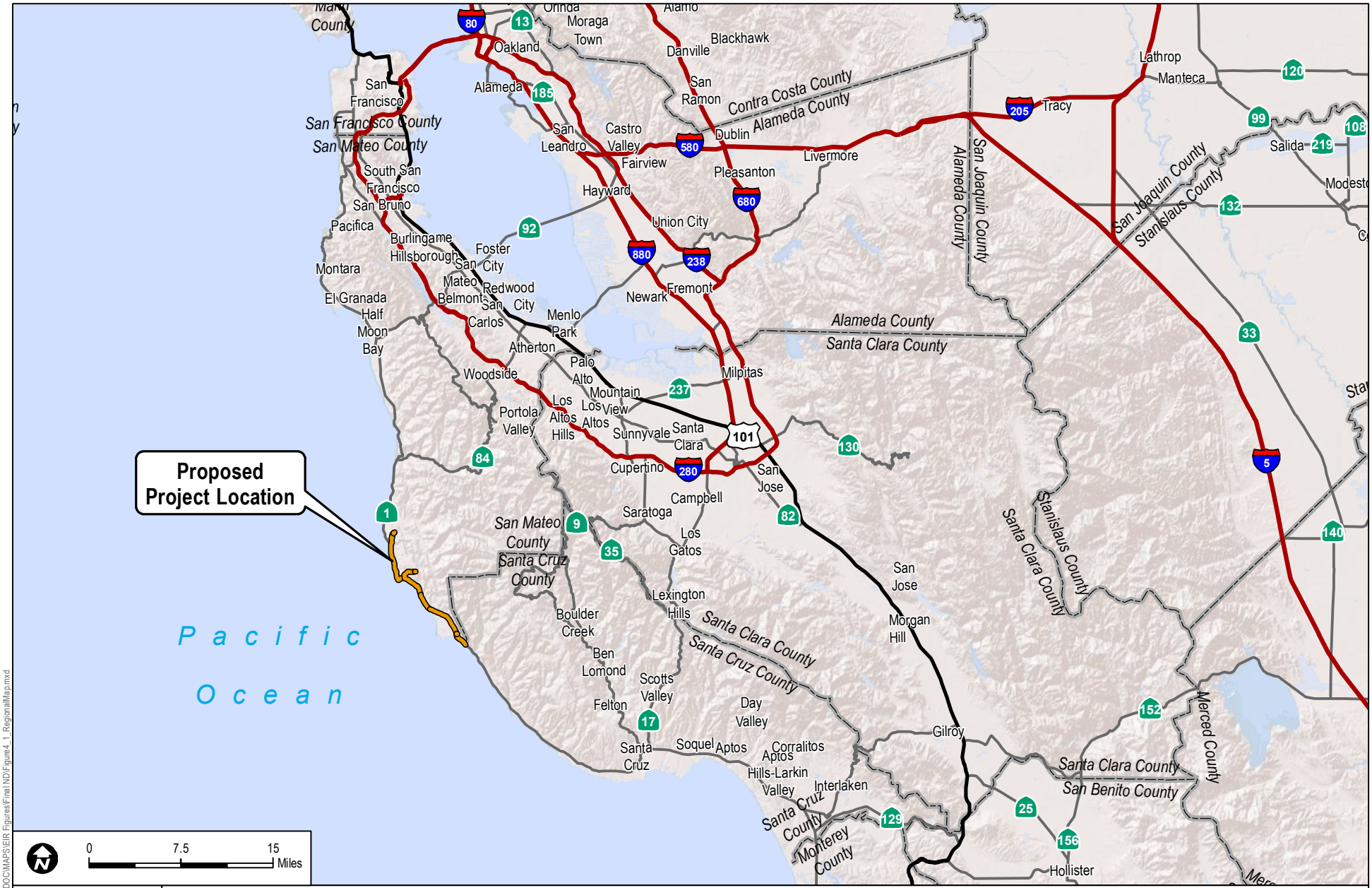

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SOURCE: ESRI 2013

FIGURE 4-1

Regional Location

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CROWN CASTLE SAN MATEO COUNTY PROJECT

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SOURCE: ESRI 2013

FIGURE 4-2(a)

Vicinity Map

CROWN CASTLE SAN MATEO COUNTY PROJECT

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SOURCE: ESRI 2013

FIGURE 4-2(b)
Vicinity Map

CROWN CASTLE SAN MATEO COUNTY PROJECT

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SOURCE: ESRI 2013

FIGURE 4-2a(a)
Northern Map

CROWN CASTLE SAN MATEO COUNTY PROJECT

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SOURCE: ESRI 2013

FIGURE 4-2a(b)
Northern Map

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CROWN CASTLE SAN MATEO COUNTY PROJECT

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SOURCE: ESRI 2013

FIGURE 4-2b(a)

Southen Map

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CROWN CASTLE SAN MATEO COUNTY PROJECT

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DAS Antenna
Aerial
Underground (HDD)
Santa Cruz County
San Mateo County
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Pacific
Ocean
0
1,000
2,000
Feet
SOURCE: ESRI 2013
FIGURE 4-2b(b)
Southern Map
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