BERNAL PEAK

Coverage Plots

May 2nd, 2025

Existing Network Conditions

Currently, the area surrounding Point Reyes Station is primarily served by a single cell site located approximately **6 miles south** from the Point Reyes town center. Due to this distance and local terrain, signal levels degrade significantly as signals approach Point Reyes Station, resulting in limited LTE coverage and inconsistent service quality.

While this site has historically supported the region, it is now operating at or near capacity leading to dropped calls, slowed or failed data sessions, network congestion, delayed emergency communications during peak usage hours & seasonal tourism. Due to which this area has experienced repeated instances of service strain and diminished reliability causing degraded customer experience.

The area currently relies on low-band spectrum (e.g., 700 MHz, Band 13), which can propagate over long distances but lacks the bandwidth necessary to support modern data demands.

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Existing Network Conditions

Mid-band spectrum (AWS, PCS, and C-Band) is currently not available in Point Reyes Station due to distance and terrain limitations. Please note that the mid-band frequencies are crucial for capacity and speed – but they do not travel as far or penetrate obstacles as well as low-band.

Key reasons why we don't have any mid-band coverage from neighboring site (approximately 6 miles away):

- ❑ Higher frequencies attenuate (weaken) more rapidly over distance.
- ❑ Mid-band signals are more easily blocked by terrain features, such as hills, forests, buildings etc.
- ❑ Path loss is significantly higher at mid-band frequencies, especially in non-line-of-sight (NLOS) environments, which are common in this region due to elevation changes and tree cover.
- ❑ As a result, even though low-band signals can reach over 6 miles if LOS criteria is met, mid-band signals fade out well before that, leaving Point Reyes Station without mid-band or 5G service.

Once we have a new site in this area, we will provide significantly improved data throughput, capacity, and network reliability to meet growing user demands for mobile voice and high-speed data services. The C-Band, in particular, enables 5G services with enhanced bandwidth and low latency.

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Justification for a New Site (Bernal Peak)

- ❑ Point Reyes Station and the surrounding coastal and rural areas are geographically isolated, with hilly and forested terrain that creates natural radio propagation barriers. From RF perspective this is an underserved area.
- ❑ Field testing and coverage mapping indicate intermittent or degraded signal strength, particularly in low-lying areas and deep canyons.
- ❑ A site located within or adjacent to Point Reyes Station would fill critical dead zones and ensure seamless coverage for law enforcement, fire response, EMS, and emergency coordination teams.
- ❑ Establish local mid-band coverage, allowing for deployment of AWS, PCS, and C-Band frequencies.
- ❑ Provide high-capacity LTE and 5G service, supporting greater data throughput and better user experience.
- ❑ Enable reliable in-building coverage, which mid bands excel at when deployed locally but cannot achieve from distant sites.

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Justification for a New Site (Bernal Peak)

- ❑ Offload demand from the existing distant site, which is no longer able to serve the growing data needs effectively.
- ❑ The current site serving the region has reached its design limits in terms of bandwidth and simultaneous user support.
- ❑ Dispatch delays and congestion during peak events or concurrent incidents have been documented.
- ❑ Establishing a secondary, geographically closer site will load-balance user demand, reduce latency, and improve overall system responsiveness.
- ❑ Point Reyes is in a seismically active and fire-prone region where communications infrastructure must be resilient and redundant.
- ❑ A second site would provide critical failover capability in the event of natural disasters, equipment failure, or power outages at the primary location.
- ❑ Enhanced reliability is essential for first responders and interagency coordination during mutual aid deployments.

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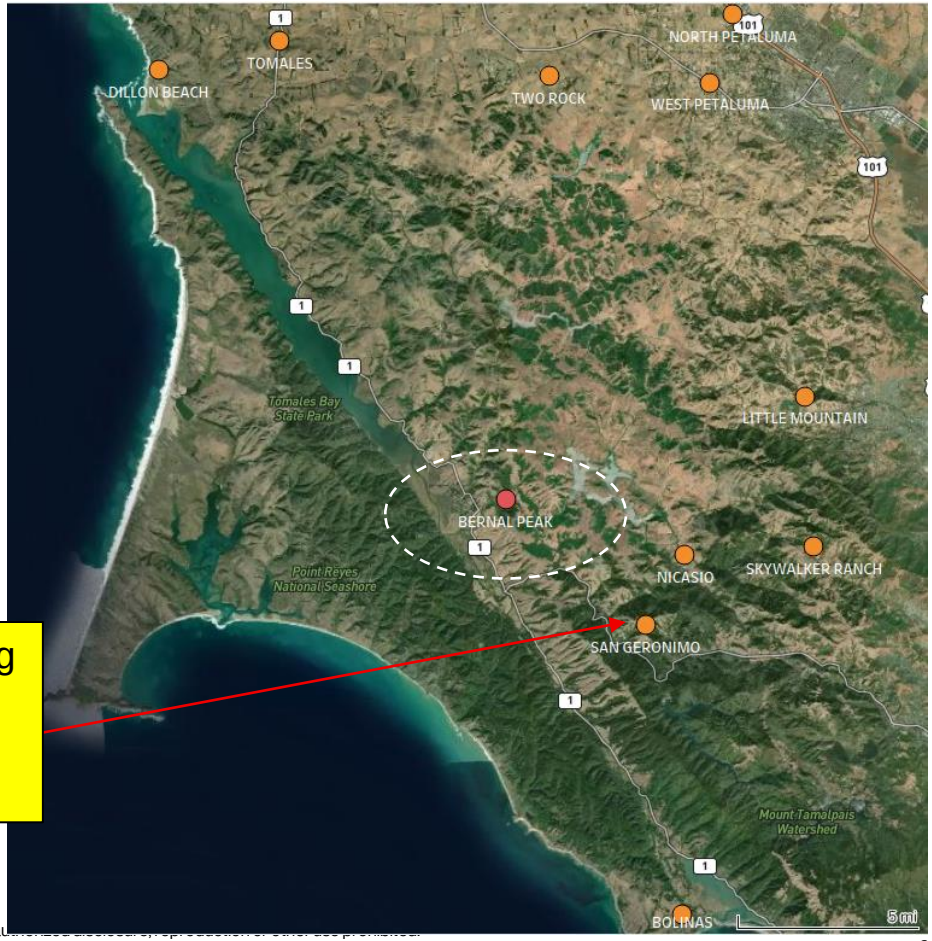
VERIZON Existing site near Proposed Bernal Peak

- Proposed Site (Bernal Peak)
- Existing Verizon Sites



This is the only on air site which is providing coverage in the town of Point Reyes & is more than 5 miles from the town. This is a very challenging terrain.

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VERIZON Existing sites near proposed Bernal Peak (Details)

Site Friendly Name	Latitude	Longitude	Street Address	City	County	State	Zip Code
NORTH PETALUMA	38.271713	-122.671673	200 Stony Pt. Rd.	Petaluma	Sonoma	CA	94952
TOMALES	38.261239	-122.902678	28375 Shoreline Hwy	Tomales	Marin	CA	94971
SKYWALKER RANCH	38.058808	-122.630536	3800 LUCAS VALLEY RD	NICASIO	Marin	CA	94946
TOMALES	38.261239	-122.902678	28375 Shoreline Hwy	Tomales	Marin	CA	94971
NICASIO	38.055158	-122.696225	3431 Nicasio Valley Rd	Nicasio	Marin	CA	94946
DILLON BEACH	38.249622	-122.964728	37 Cypress Avenue	Dillon Beach	Marin	CA	94929
BOLINAS	37.91091667	-122.6973889	100 MESA RD	BOLINAS	Marin	CA	94924
WEST PETALUMA	38.244519	-122.683242	3500 Bodega Avenue	Petaluma	Sonoma	CA	94952
LITTLE MOUNTAIN	38.118906	-122.635272	3015 Novato Blvd	Novato	Marin	CA	94947
SAN GERONIMO	38.027269	-122.716411	1 Mtn. King Rd.	Lagunitas	Marin	CA	94938
TWO ROCK	38.247331	-122.765393	4550 Spring Hill Rd	Petaluma	Sonoma	CA	94952
BERNAL PEAK	38.077679	-122.78772	14000 Pt Reyes Rd	Point Reyes Station	Marin	CA	94956

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VERIZON TECHNOLOGY AND SERVICES OFFERED TO IT'S CUSTOMERS

Type of technology configured in this proposed site will be **Verizon Wireless Services** offered to our subscribers.

Consumer services Verizon offers to its subscribers.

- ❑ Mobile Data Services i.e. 4G LTE & 5G Data Plans, 5G Ultra Wideband (C –Band) & Mobile Hotspot Services.
- ❑ Voice
- ❑ Emergency 911 calls
- ❑ Text Messaging
- ❑ Video Calls
- ❑ Verizon Fixed Wireless Access (FWA) i.e. Wireless broadband internet delivered via Verizon's 5G network & LTE Home Internet which is used in areas without 5G coverage.

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VERIZON FREQUENCY AND BANDWIDTH OFFERED TO IT'S CUSTOMERS

Band	FCC Designation	Frequency Band	Bandwidth
700 MHZ	UHF Low Band	700 MHz	10 MHz
850 MHZ	Cellular	850 MHz	10 MHz
PCS	Personal Communications Service	1900 MHz	10 MHz
AWS 1	Advanced Wireless Service	2100 MHz	20 MHz
AWS 3	Advanced Wireless Service-3	2170 MHz	10 MHz
C Band	C-Band	3700 MHz	140 MHz

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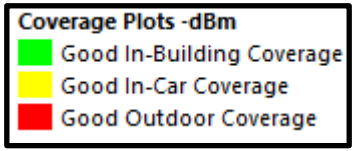
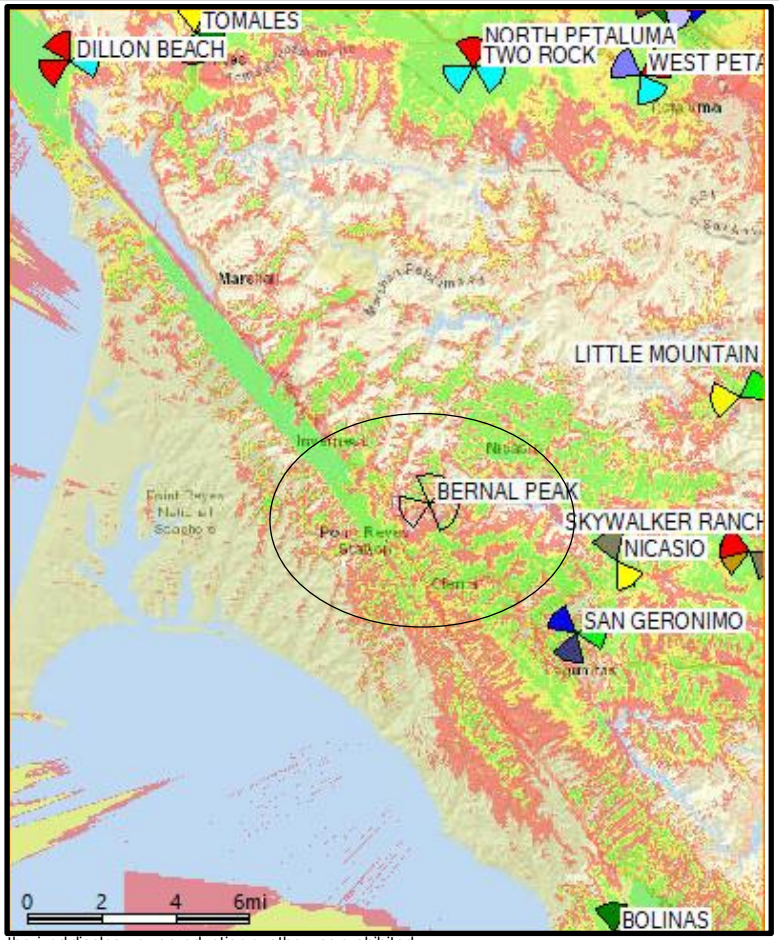
LTE - COVERAGE MAP of Existing On-Air (700MHz Band)

RSRP coverage plots is color-coded map that shows how strong the lte signal is in different locations





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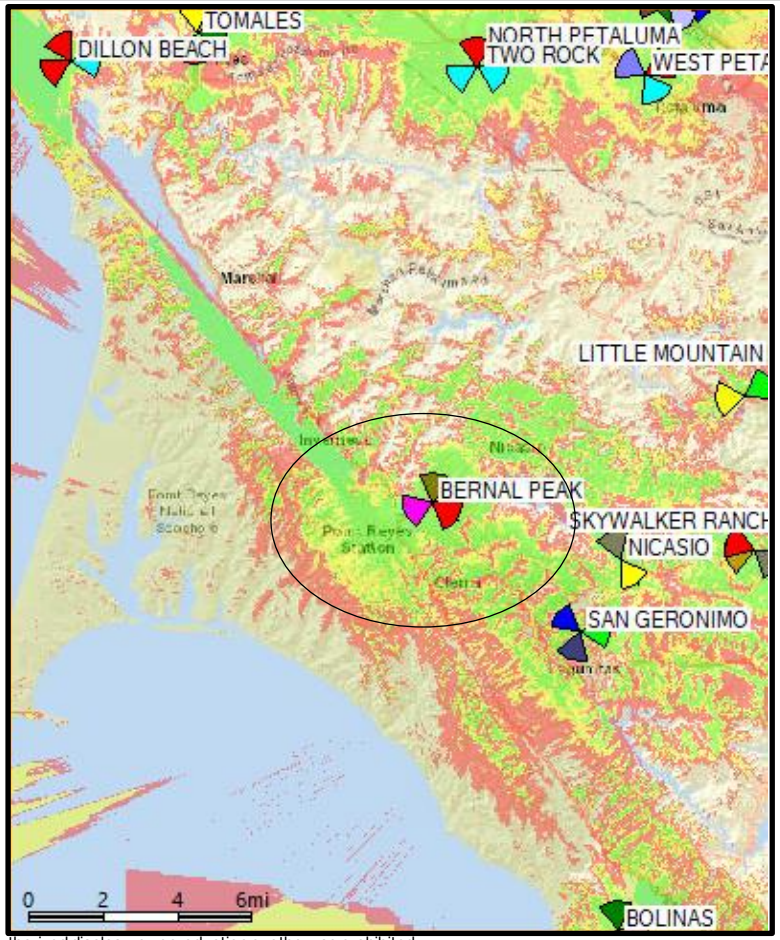
LTE - COVERAGE MAP of Existing On-Air & Proposed Bernal Peak (700MHz Band)

Coverage Plots -dBm
- Good In-Building Coverage
- Good In-Car Coverage
- Good Outdoor Coverage



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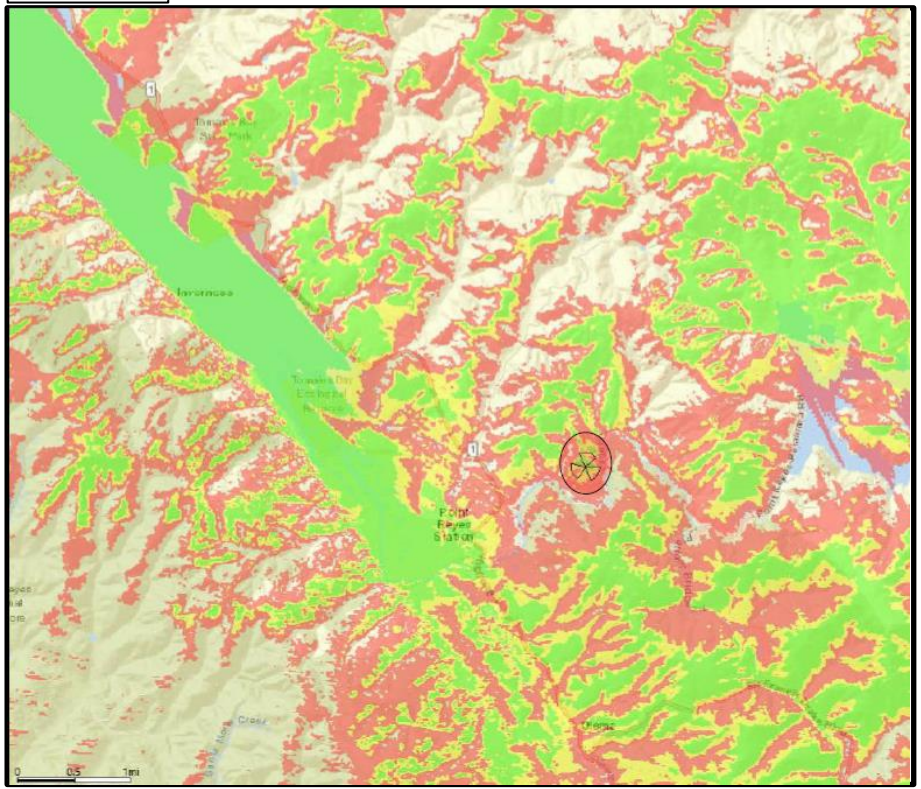
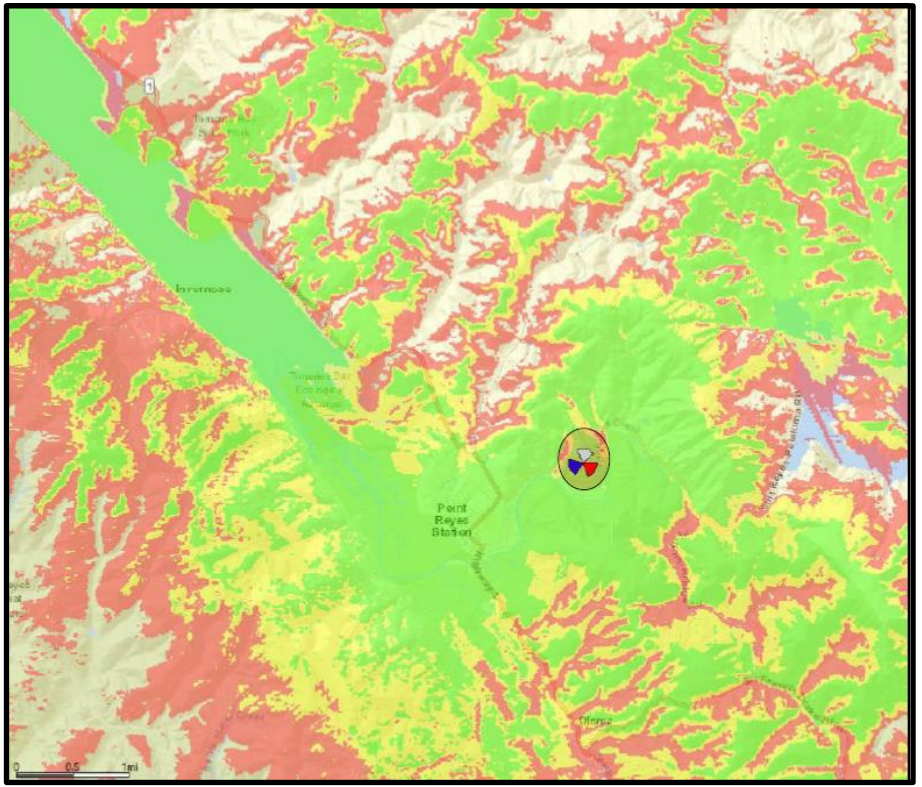
ZOOMED IN COVERAGE PLOTS WITH & WITHOUT BERNAL PEAK

Before



After



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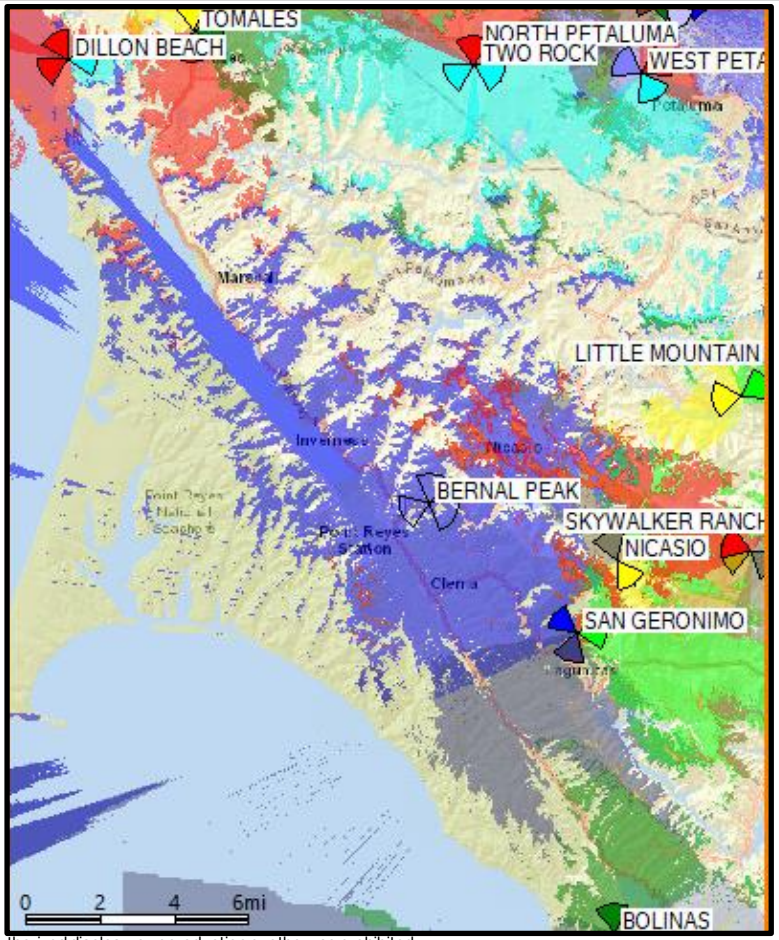
Current 700 MHz Best Server Map of Existing On-Air (700MHz Band)

Best Server Plot shows which transmitter/sector provides the strongest signal at each location.



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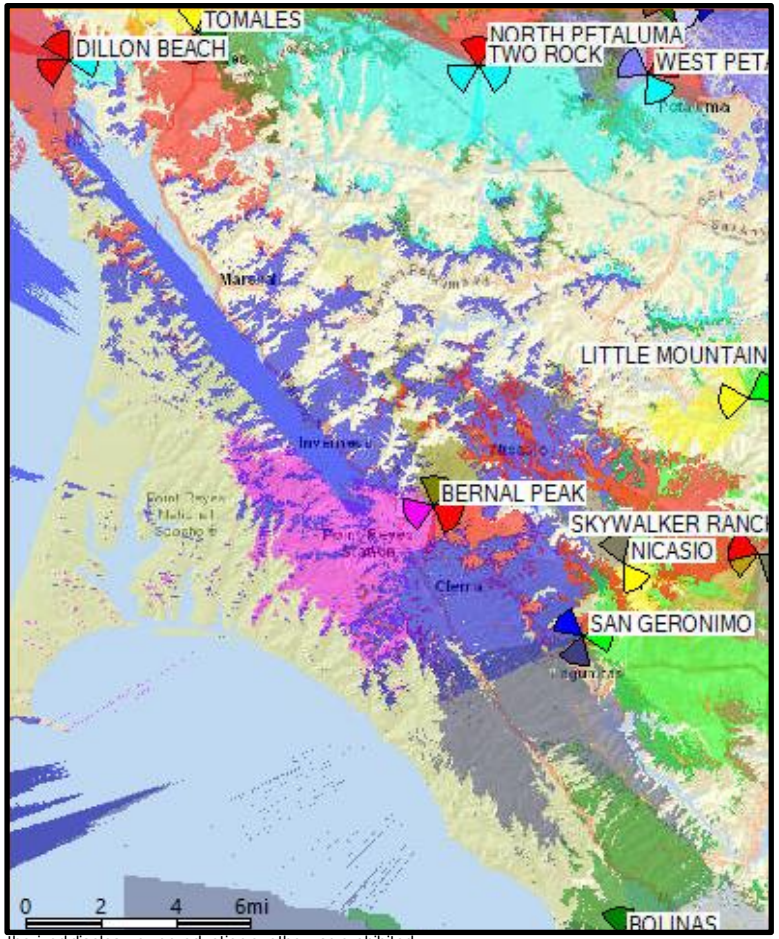
Best Server Map of Existing On-Air & Proposed Bernal Peak (700MHz Band)

Best Server Plot shows which transmitter/sector provides the strongest signal at each location.



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Cell Site Height Justification for Bernal Peak (50- foot Tower)

The proposed Verizon Wireless cell site is situated approximately 1 mile east of Point Reyes Station, at an elevation of 308 feet above mean see level (AMSL). This location, while elevated, is set back from the hill's edge, meaning the signal must traverse the terrain to reach the town.

Key Considerations while selecting height of the tower

- ❑ Although the site is on a hill, if the terrain stays flat or higher for half a mile, the antenna does not gain a height advantage over the clutter in the surrounding area (see snapshot on page 17).
- ❑ RF signals will travel horizontally into clutter (trees, small ridges), rather than projecting cleanly over the area. This limits the effective coverage radius, especially in the direction of Point Reyes Station.
- ❑ Even distant homes on the hill may be below the line-of-sight or blocked by forest lines or dip in terrain. Without adequate antenna height, signal strength at these locations can be inconsistent, with degraded indoor coverage.
- ❑ Mid-band frequencies, such as AWS, PCS, and C-band, are particularly susceptible to signal degradation due to terrain obstructions. If the antenna is mounted too low, the signal will be shadowed by the intervening hill, leading to inconsistent or poor coverage in Point Reyes Station, especially in in-building environments.

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Cell Site Height Justification for Bernal Peak (50- foot Tower)

- Importantly, construction on hilltop sites is significantly more expensive, requiring specialized access, power, fiber and communications infrastructure. If the site can't accommodate the necessary antenna height due to zoning or physical constraints, it is not a cost-effective or technically viable location for RF deployment.

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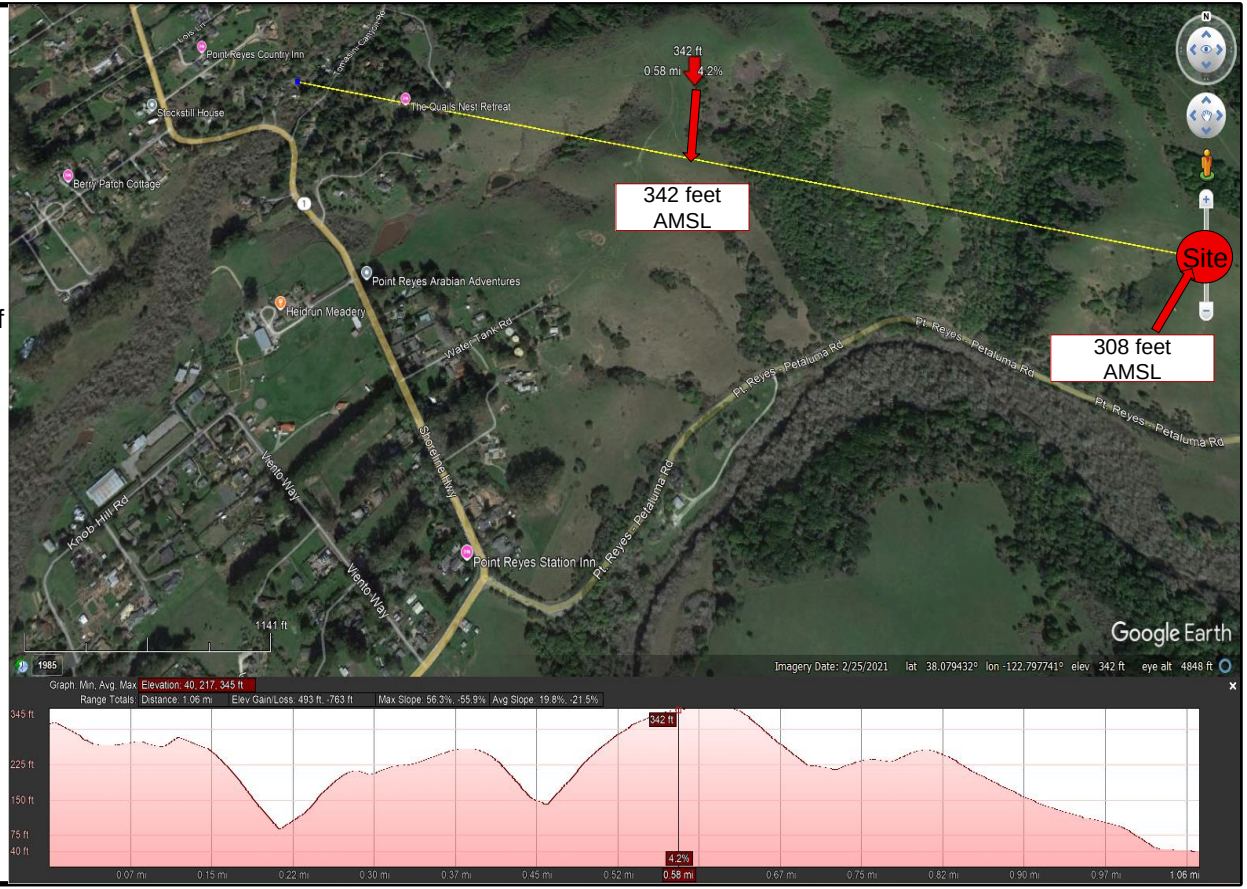
Elevation Profile from the cell site to the Town of Point Reyes

- Point Reyes Station sits at roughly 40-50 feet AMSL, making it 260 feet lower than the cell site. However, due to the intervening 342-foot terrain feature, the elevation advantage is cancelled unless the antenna is raised high enough to see over it.
- As per the snapshot the nearby terrain feature or ridge which is half a mile away reaches 342 feet AMSL, which is 34 feet higher than the current cell site elevation (308 AMSL)
- To ensure unobstructed coverage to Point Reyes Station, and to overcome the terrain obstructions at 0.5 miles away, a minimum 50-foot tower is required at the 308 AMSL cell site.
- Without a tall enough antenna height, this ridge blocks the line-of-sight and degrades signal propagation toward Point Reyes Station.



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Executive Summary/Conclusion:

The proposed Verizon Wireless cell site in Point Reyes Station, Marin County is a strategic and necessary addition to the network, addressing critical coverage, capacity and service quality issues in this underserved area.

Currently, the region is served only by a distant site located approximately six miles away, which is now triggering capacity thresholds due to increasing user demand – particularly during seasonal tourism and peak usage hours. While low-band spectrum (e.g., 700 MHz) provides limited extended coverage, it is increasingly inconsistent and insufficient to support modern data needs, especially indoors or at the edges of signal range. Additionally, the areas complex coastal terrain, including hills, dense vegetation, and elevation changes, further limits reliable signal propagation.

Once we have a new site in this area, we will provide significantly improved data throughput, capacity, and network reliability to meet growing user demands for mobile voice and high-speed data services. The C-Band, in particular, enables 5G services with enhanced bandwidth and low latency. This site will ensure a future-ready wireless network for residents, visitors, businesses, and first responders, bringing next-generation connectivity to geographically challenging and historically underserved part of Marin County.

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