

November 8, 2022 Document Submittal

Verizon Wireless

Petition for Small Cell Installation  
Facility

Pole #34 within Public Way Layout near  
385 Farm Road

## City Council

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**From:** City Council  
**Sent:** Tuesday, November 8, 2022 4:39 PM  
**To:** Christian Dumais; David Doucette; Don Landers; Donald Landers (donald\_landers@msn.com); John Irish; Karen Boule; Kathleen Robey; Laura Wagner; Mark Oram; Mike Ossing; Samantha Perlman; Sean Navin; Teona Brown  
**Cc:** Steven Kerrigan; Wilson Chu  
**Subject:** From Verizon: Documents for next week's Public Services Committee from Verizon Wireless, Small Cell  
**Attachments:** Common\_RF\_emissions.pdf; Marlboro SC42 MA Engineering Necessity Case (1).pptx; Marlborough site alternate lis1.pdf; GoogleEarth\_View Farm Road Poles (2).pdf

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**From:** Glidden, Elizabeth (Liz) <elizabeth.glidden@verizonwireless.com>  
**Sent:** Tuesday, November 8, 2022 4:21 PM  
**To:** Karen Boule <kboule@marlborough-ma.gov>  
**Subject:** documents for next week

Karen,

Please find attached the updated Necessity Case , a list of alternate sites with photos, an aerial map of those locations and a list of common RF emissions all for next Monday's hearings. Please feel free to share these with the Committee members.

Thank you,  
Liz

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**verizon**  
Liz Glidden

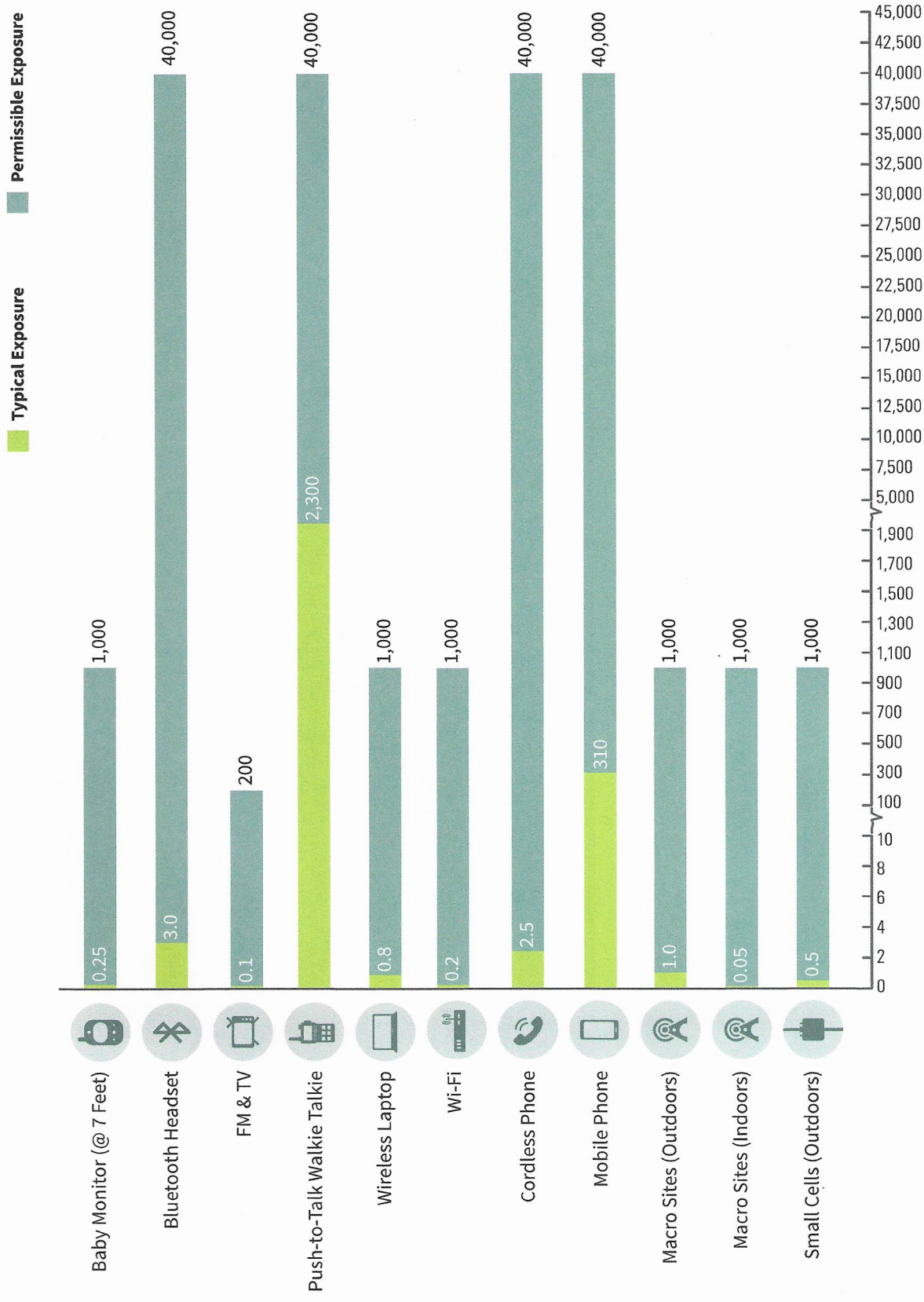
Real Estate and Regulatory Specialist  
Network Engineering

M 508 245 8832  
20 Alexander Drive  
Wallingford, CT 06492



# Common Radiofrequency Exposures ( $\mu\text{W}/\text{cm}^2$ )

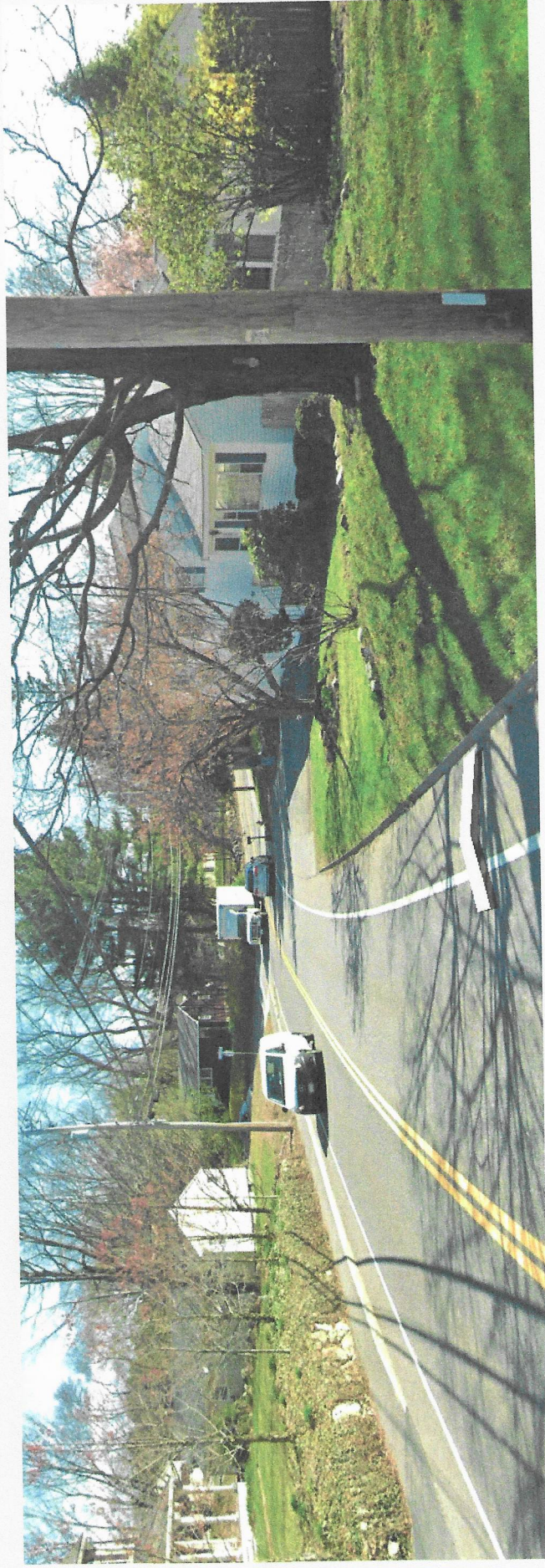
( $\mu\text{W}/\text{cm}^2$ ) = microwatts per centimeter squared



A maximum exposure is generally taken to be a worst case (whole body) exposure value from a source whereas a typical exposure is a more realistic exposure one might expect to receive from a given source. The maximum exposure would usually exist only at a specified distance from the source whereas the typical exposure might occur at a wide range of locations and represent a more realistic exposure from a given source.

# Verizon Wireless Communications Facility

Engineering Necessity Case – Marlborough SC42, MA



Prepared by: Stephen Nerkowski, Juan (Jay) F. Latorre III

August 3<sup>rd</sup>, 2022

Revised October 26<sup>th</sup>, 2022



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## **Project Need Overview:**

The primary objective for this project is to improve service quality along Farm Road in Marlborough, MA. Farm Road is a busy residential street that connects to Boston Post Road (Route 20). To ensure that Verizon can continue to provide the service quality our customers rely on, we propose the installation of a small antenna, radio unit, and ancillary equipment on an existing utility pole within the right of way.

Additional details and explanations follow in this presentation.



## **Introduction:**

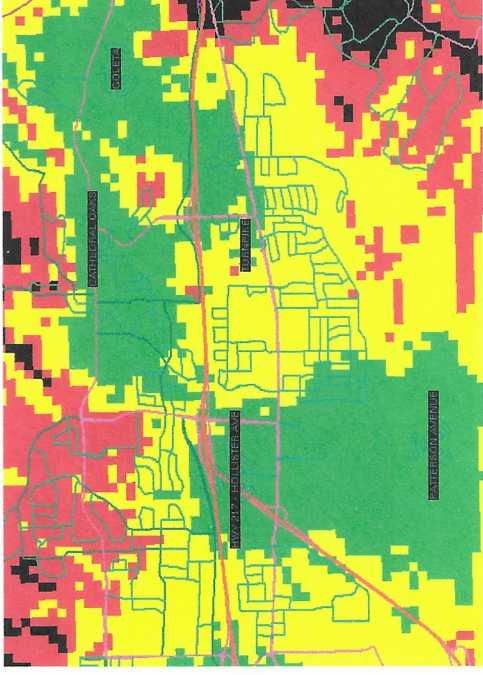
Coverage and/or capacity deficiencies are the two main drivers that prompt the need for a new wireless communications facility (WCF). Most WCF provide a mixture of both capacity and coverage for the benefit of the end user.

**Coverage** describes the existence or lack of wireless service in an area. The request for improved service often comes from our customers or emergency services personnel that have no service or poor service. Coverage used to refer to the ability to make or place a call in vehicles, however, as usage patterns have shifted, coverage is now determined based on whether or not sufficient WCF exist to provide a reliable signal inside of buildings and residential areas, as well. Historically, when wireless was still in its infancy, coverage was the primary means to measure the effectiveness of the network in a given area.

**Capacity** is the metric used to determine if sufficient wireless resources exist and is now the primary means to measure how a community's wireless needs are being addressed. "Five bars" no longer means guaranteed coverage and capacity because each WCF has a limited amount of resources to handle voice calls, data connections and data volume. When these limits are reached and the WCF becomes overloaded (meaning there is more demand than signal to service it), the user experience quickly degrades preventing customers from making/receiving calls or getting applications to run. A WCF short on capacity could also make internet connections time out or delay information to emergency response personnel.



## Explanation of Wireless Coverage

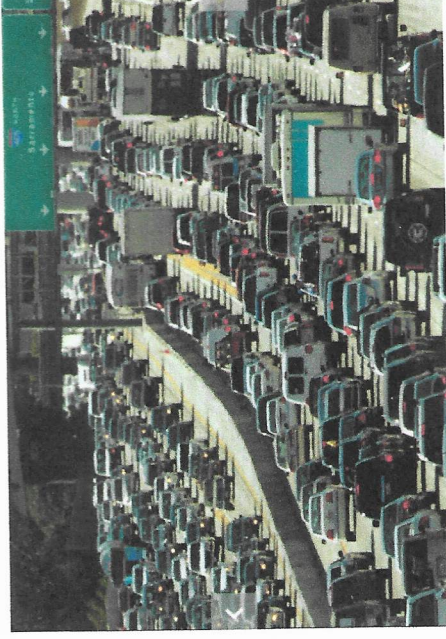


**Coverage** is best shown via coverage maps. RF engineers use tools that take into account terrain, vegetation, building types, and WCF specifics to model the existing coverage and prediction what we expect to see with the addition of a proposed WCF.

Coverage also changes depending on which frequencies are used. Most phones today use 3G at 800 MHz or 4G at 700 MHz spectrum which are considered low frequencies. Low frequencies can travel further distances than the higher 1900 MHz and 2100 MHz frequencies now being employed due to increased capacity demands. Operating at higher frequencies makes it necessary for carriers to install substantially more wireless facilities to achieve the same coverage as one tower operating on the lower frequencies.



## Explanation of Wireless Capacity



**Capacity** is the amount of resources that a WCF has to service customer demand. Verizon utilizes sophisticated programs and customer feedback to monitor current usage trends and to forecast future needs. Because it takes an average of 2-3 years to complete a WCF, we have to start the process of adding a new WCF several years in advance of when the WCF will be needed.

**Location, Location, Location.** A good capacity WCF needs to be in the center of a user population which insures that traffic is evenly distributed around the WCF. A typical WCF is configured into three sectors (like a pie cut into three pieces), with each slice (sector) having 33% of the WCF resources. If one sector is under-utilized, it's resources can not necessarily be diverted to another sector. Therefore, optimal performance is only obtained when all three sectors have an even traffic distribution.





# Explanation of Wireless Data Growth

## Wireless Data Growth

Each year Verizon sees large increases in how much data its customers need. As the resolution of the pictures we send increases, the quality of the video we watch improves and the complexity of the applications grow, we commonly see tremendous growth year-over-year. [Insert latest growth info from COMET web page and citing the source]

Machine to Machine communications will also increase the data burden on wireless networks, as over the next five (5) years more and more services that improve our safety and make our lives easier will be available over the wireless infrastructure , such as:

- Cars that notify 911 when an airbag deploys.
- “Driverless” cars needing traffic data and maps to reach your destination as quickly as possible.
- Medical monitors that will alert us should a loved one neglect taking their prescription drugs.
- Home alarms that notify you when your child arrives home from school.
- Smart street lights that notify the city when they are not working.
- City garbage cans that let people know when they need to be emptied.
- Tracking watches will aid in finding lost Alzheimer patients.



## Radio Emission Safety...

A common question received is “Are the radio emissions safe?”

Verizon goes to great effort to ensure that all of its projects meet the standards established by the FCC to ensure safety of the public and its employees. The links below are to three reputable organizations that have performed extensive reviews of the science available on this subject and have good educational articles on the results of their research.

World Health Organization

<http://www.who.int/peh-emf/about/WhatIsEMF/en/index1.html>

America Cancer Society

<https://www.cancer.org/healthy/cancer-causes/radiation-exposure/cellular-phone-towers.html>

FCC Radio Frequency Safety

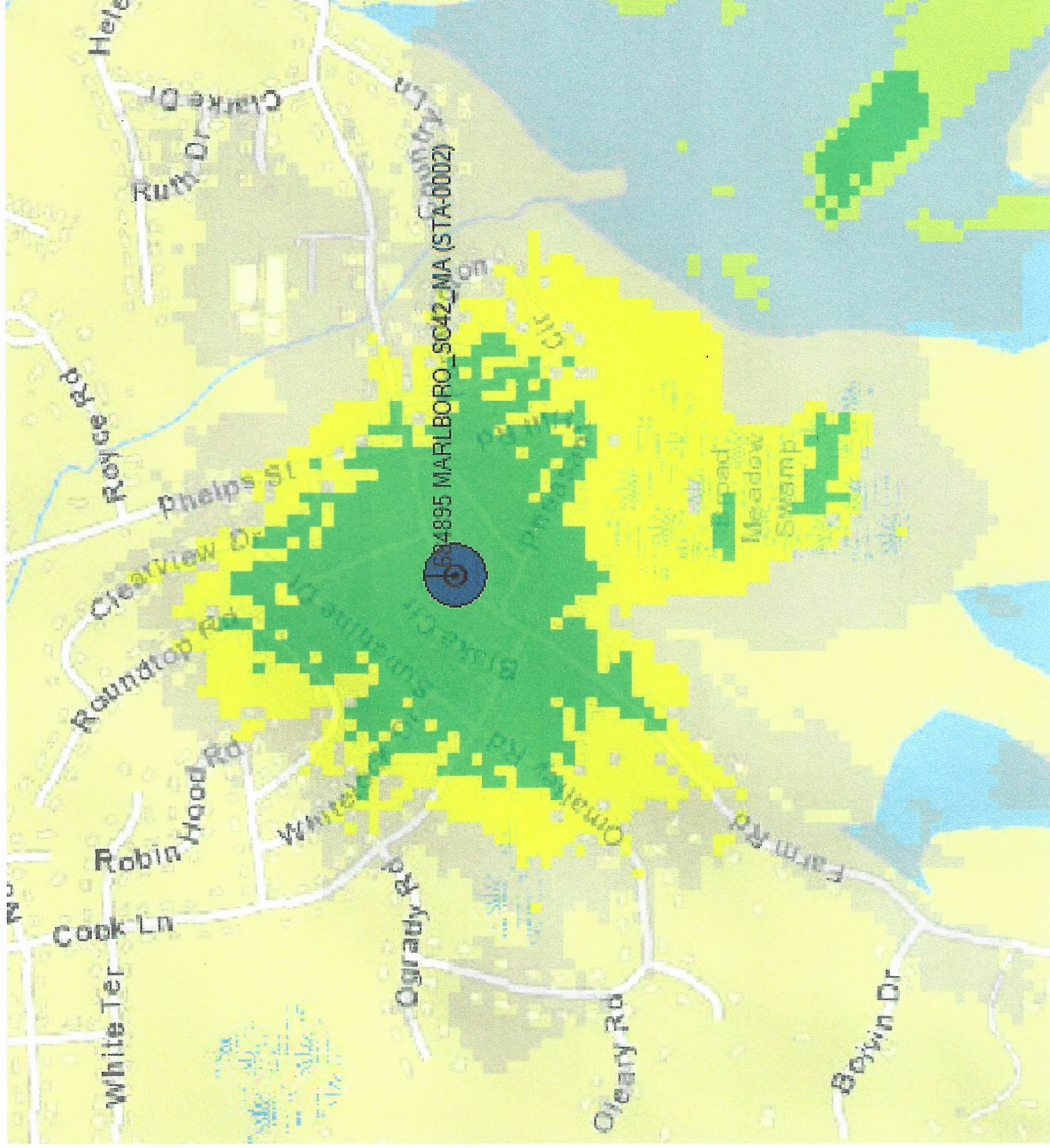
<https://www.fcc.gov/general/radio-frequency-safety-0>



# Marlborough SC42, MA Area Overview



Marlborough SC42, MA Proposed Coverage



- 105 = On-Street Coverage
- 95 = In-Vehicle Coverage
- 85 = In-Building Coverage



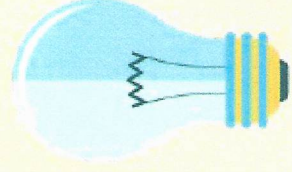
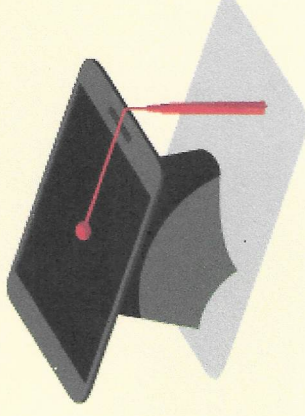
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**verizon**<sup>v</sup>

Marlborough site alternate list

Verizon Wireless

11/07/22

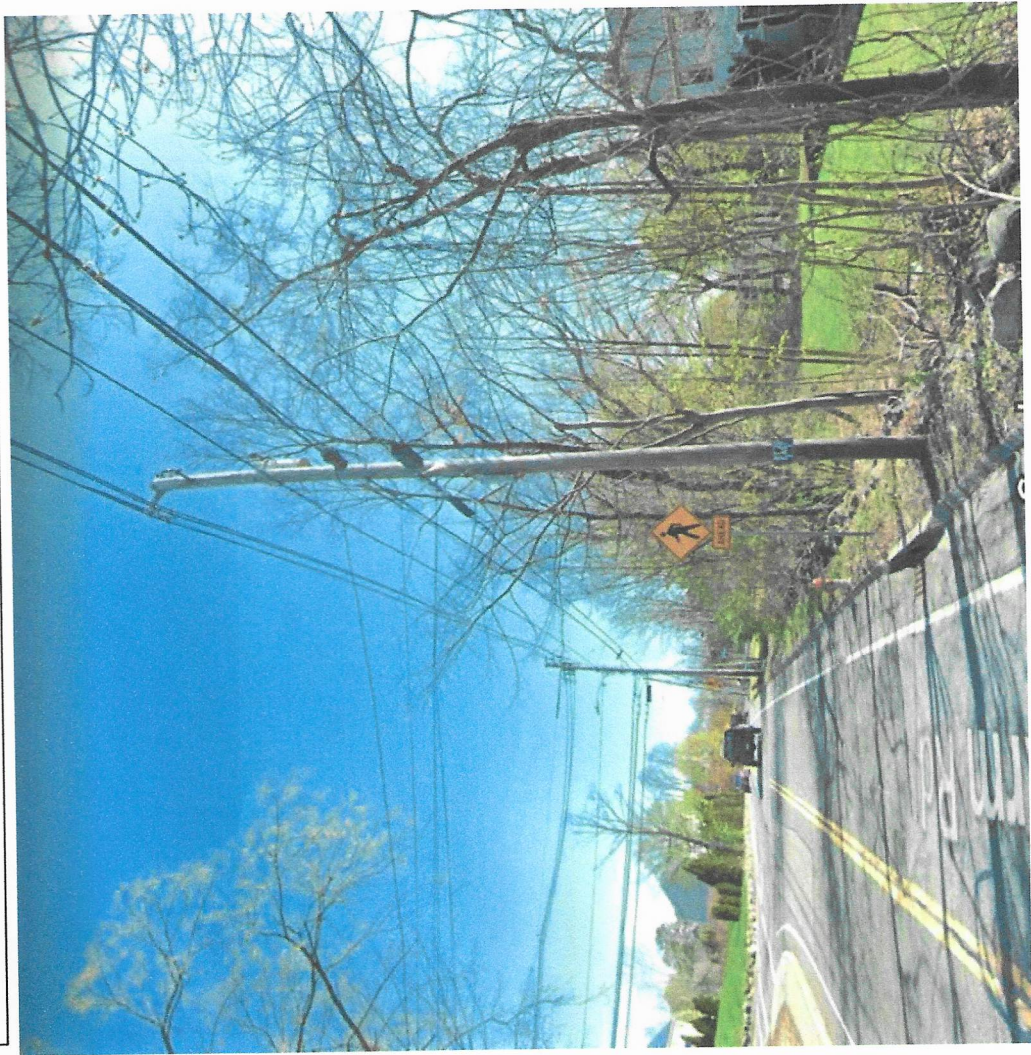
Please see attached list of utility poles within 500 feet in each direction along Farm Road. There are a total of 9 poles on the list including the subject site Pole 34. Seven of the alternate candidates were ruled out due to issues that would prevent NGRID from licensing Verizon Wireless on the pole. These items include other attachers, primary power, junction poles, risers, and guy wires.

There is one pole – Pole 32-50 that meets the Ngrid criteria for attachment. In order for it to be a viable candidate it would need to have the Primary power lowered or the pole replaced with a taller pole to allow for an antenna attachment. This pole is further from the target location, and at a lower elevation than the selected candidate, therefore we selected pole 34 which is the subject of this application.

| Utility Pole # | Street Name | Address / Location Info                          | Comments /Notes  |
|----------------|-------------|--|--|
| 38             | Farm Road   | Farm Road @ Pheasant Hill Road                   | Fuzes and Riser - Antenna Not allowed by NGRID                                     |
| 37             | Farm Road   | 391 Farm Road                                    | 3rd Party Equipment & Meter on Pole - Antenna Not allowed by NGRID                 |
| 36             | Farm Road   | 391 Farm Road Opposite Birchwood Drive           | 3rd Party Equipment on Pole - Antenna Not allowed by NGRID                         |
| 35             | Farm Road   | 392 Farm Road                                    | Transformer / Risers - Primary Power - Antenna Not allowed by NGRID.               |
| 34*            | Farm Road   | 385 Farm Road                                    | Proposed Antenna Location  |
| 33             | Farm Road   | Farm Road @ Pheasant Hill Road                   | Primary Junction Pole -- Antenna Not allowed by NGRID.                             |
| 32-50          | Farm Road   | Intersection of Farm Road and Pheasant Hill Road | Located further from location needed. Need to lower Primary power or Replace pole. |
| 32             | Farm Road   | Farm Road Opposite Cook Lane                     | Primary Junction Pole -- Antenna Not allowed by NGRID.                             |
| 31             | Farm Road   | 351 Farm Road after Cook Lane                    | Transformer / Antenna Not allowed by NGRID.  |



Pole 31





Pole 32-50



Pole 33



Pole 36



Pole 35





Pole 37



Pole 38



Pole 39





