
RF Affidavit

Proposed Mobile Service Facility
1896 Williams Drive,
Stoughton, WI 53589



November 8, 2023

OVERVIEW

This RF Affidavit has been prepared on behalf of Verizon Wireless in support of TowerNorth's proposal for the installation and operation of a mobile service support structure and associated mobile service facility located at 1896 Williams Drive, Stoughton, WI 53589. The proposed facility will consist of ground-based equipment cabinets along with antennas and associated equipment mounted on the proposed 180' self-support tower.

This report concludes that the proposed site will provide additional capacity to Dane County to improve deficient service areas in the City of Stoughton, and the surrounding roads, neighborhoods, businesses, and residents in proximity to the proposed site.

Included in this report is: a summary of the site's objectives, maps showing Verizon Wireless' current network plan, and modeled Radio Frequency coverage of the subject site and the surrounding sites in Verizon Wireless' network compiled by Hemal Parikh Verizon Wireless RF Engineer. He is currently an RF Design engineer for Verizon Wireless and graduated from Purdue University with a degree in Electrical Engineering, he is familiar with Verizon Wireless' network needs in the Dane County area and has been the RF engineer for the area for the past 4 years.

INTRODUCTION

Verizon Wireless provides digital voice and data communications services using 3rd Generation (3G) CDMA/EVDO technology in the Cellular (800 MHz) and PCS (1900 MHz) frequency bands and deploying advanced 4th Generation (4G) voice and data services over LTE technology in the 700 MHz, Cellular, PCS, AWS (2100 MHz), and is in the midst of deploying 5th Generation (5G) C-Band (3.7-3.9 GHz) frequency bands as allocated by the FCC. These networks are used by mobile devices for fast web browsing, media streaming, and other applications that require broadband connections. The mobile devices that benefit from these advanced networks are not limited to basic handheld phones, but also include devices such as smartphones, PDA's, tablets, and laptop air-cards. With the evolving rollout of 4G & 5G services and devices, Verizon Wireless customers will have even faster connections to people, information, and entertainment.

For Verizon Wireless' network to function effectively, there must be adequate overlapping coverage

between the “serving cell” and adjoining cells. This not only allows a user to access the network initially, but also allows for the transfer or “hand-off” of calls and data transmissions from one cell to another and prevents unintended disconnections or “dropped calls.”

Verizon Wireless’ antennas also must be located high enough above ground level to allow transmission (aka propagation) of the radio frequency signals above trees, buildings, and other natural or man-made structures that may obstruct or diminish the signals. Areas without adequate radio frequency coverage have substandard service, characterized by dropped and blocked calls, slow data connections, or no wireless service at all, and are commonly referred to as coverage gaps

The size of the area potentially served by each cell site depends on several factors including the number of antennas used, the height at which the antennas are deployed, the topography of the surrounding land, vegetative cover, and natural or man-made obstructions in the area. The actual service area at any given time also depends on the number of customers who are on the network in range of that cell. As customers move throughout the service area, the transmission from the phone or other device is automatically transferred to the Verizon Wireless facility with the best reception, without interruption in service, provided there is overlapping coverage between the cells.

We have concluded that by installing the proposed wireless communication facility at 1896 Williams Drive, Stoughton, WI 53589, at an antenna centerline height of 175’ AGL (above ground level), Verizon Wireless will be able to provide improved capacity to residents, businesses, and traffic corridors within Stoughton that are currently located within the gap in optimal service of Verizon Wireless’ network.

THE PROPOSED FACILITY

Verizon Wireless’ plan for this proposed facility would consist principally of the following elements:

- 1) A fenced equipment lease area of 65’ x 65’ within TowerNorth’s overall 100’ x 100’ lease parcel;
- 2) Telecommunication equipment cabinets with utility connections to the proposed H-frame and other utility sources within the proposed compound;

- 3) Twelve (12) antennas (four per sector) mounted on the proposed 180' self-support tower, at a centerline elevation of between 175' AGL,
- 4) Remote Radio Units (RRU) with accessory junction boxes, hybrid cabling, and surge suppressors mounted along with the antennas

The minimum required elevation above the mean sea level necessary to provide the services is 180'.

SITE SEARCH AND SELECTION PROCESS

To find a site that provides acceptable coverage, adequate capacity, and fills the gaps in service, computer modeling software is used to define a search area. The search ring identifies the area within which a site could be located (assuming sufficient height is considered) that would have a high probability of addressing the significant coverage gap and/or meeting the capacity objectives established by the Verizon Wireless RF (Radio Frequency) engineers.

Once a search ring is determined, Verizon Wireless' real estate specialists search within the proximity of the defined area – in this case within a ¼ mile radius from the search ring center -- for existing buildings, towers, and other structures of sufficient height that would meet the defined objectives. The search ring center for this site is 42 94302, -89.2256. If none are found, then the focus shifts to “raw land” sites.

A suitable site must satisfy the technical requirements identified by the RF engineers, must be available for lease, and must have access to a road and be otherwise suitable for constructing a cell site of the required size and height. Every effort is made to use existing structures before pursuing a “raw land” build to minimize the number of new towers throughout the cities and towns being served.

In accordance with the requirements of Sections 10.103(9)(b)1.b.ii and 10.103(9)(c)1 of the Dane County Ordinances, Verizon Wireless is pursuing the proposed “raw land” site instead of collocation because its real estate specialists were unable to locate any existing mobile service support structures or other tall structures (over 100 feet in height) within 1.5 miles of the center of the search ring for Verizon Wireless to consider.

The proposed site gives coverage to Lake Kegonsa better than the ATC Tower located at 42.96259,

-89.17975, which was considered, but rejected. The proposed site will provide for greater coverage with the areas surrounding Lake Kegonsa than the vetted ATC Tower does. The ATC tower is missing key areas around Lake Kegonsa compared to the proposed site. The proposed site will alleviate the capacity needs in the area compared to the ATC tower.

CAPACITY OBJECTIVES

Verizon Wireless is in the process of expanding its 4G LTE high-speed wireless broadband system in the 700 MHz, Cellular, PCS, and AWS frequency bands and in the midst of deploying 5G (C-Band) Frequency bands, in accordance with its licenses from the FCC. In order to expand and enhance their wireless services throughout Wisconsin, Verizon Wireless must address capacity, interference, and high-speed broadband issues. As part of this effort, Verizon Wireless has determined that significant gaps in service exist in and around sections of Stoughton as described further below.

Verizon Wireless currently operates wireless facilities similar to the proposed facility within the surrounding cities/towns. Due in large part to the distances between the existing sites, and volume of user traffic in the area, these existing facilities do not provide sufficient capacity to portions of the city. Specifically, Verizon Wireless determined that portions of Stoughton are without reliable service.

Although Verizon's specific network utilization metrics are confidential and proprietary, Verizon will attest to the following:

- Lack of capacity causes call blocking, which is the same as a lack of coverage to subscribers. This equates to dropped calls and inability to use service properly.
- Data consumption is increasing at an exponential rate and has already exceeded network capacity in the target area. The proposed site at 1896 Williams Drive will provide offload relief to six sectors, four of which are exhausted and require immediate relief.

New sites are very expensive and carriers/tower companies only build them when there are no other options to expand capacity. It is not something the carriers wish to do but must do to keep their service viable.

CAPACITY UTILIZATION

Although Verizon has coverage in the area, there are serious capacity constraints that can only be addressed with a new facility. Once the new site is on air, utilization of available capacity will drop from the current level to a level which will allow for excess capacity for future increases in network usage.

CERTIFICATION OF NON-INTERFERENCE & RF EXPOSURE

Verizon Wireless certifies that the proposed facility will not cause interference to any lawfully operating emergency communication system, television, telephone or radio, in the surrounding area. The FCC has licensed Verizon Wireless to transmit and receive in the Upper C-Block of the 700 MHz band, B Block of the Cellular (850 MHz) band, B Blocks of the PCS (1900 MHz) band, the A and B Blocks of the AWS (2100 MHz) band and A,B,&C Blocks of the C-BAND (3.7-3.9 GHz) RF spectrum. As a condition of the FCC licenses, Verizon Wireless is prohibited from interfering with other licensed devices that are being operated in a lawful manner. Furthermore, no emergency communication system, television, telephone, or radio is licensed to operate on these frequencies, and therefore interference is highly unlikely. Verizon confirms that this site will comply with all applicable FCC regulations regarding radio frequency safety and exposure limits.

SUMMARY

In undertaking its build-out of 4G LTE & 5G service in Dane County, Verizon Wireless has determined that an additional facility is needed to provide reliable service and additional capacity. Verizon Wireless determined that the proposed wireless communications facility at 1896 Williams Drive, Stoughton, WI 53589, at an antenna centerline height of approximately 175 feet (AGL) will provide additional coverage and capacity needed in the surrounding roads, neighborhoods, and retail/dining/business establishments in proximity to the proposed site. Without the installation of the proposed site, Verizon Wireless will be unable to improve and expand their existing 4G & 5G wireless communication services in this area of Dane County; therefore, Verizon Wireless respectfully requests that the Dane County act favorably upon the proposed facility request.

TowerNorth/Verizon Wireless

Lake Kegonsa

[Signature]
Hemal Parikh
RF Engineer
Verizon Wireless

November 8, 2023
Date

STATE OF ILLINOIS)
)
COUNTY OF COOK) ss.

Subscribed and sworn to before me on 8 day of November, 2023, by Hemal Parikh.

[Signature: Sharon A. Petrielli]
NOTARY PUBLIC FOR ILLINOIS
My Commission Expires: 7-22-2025

