

**Before Marlboro Township, NJ - Comprehensive Radio Frequency Report**

In the Matter of:       The Application for Municipal Approvals submitted by New Cingular Wireless PCS, LLC ("AT&T") to construct a Wireless Telecommunications Facility consisting of antennas on a proposed Monopine and equipment located on the ground on property located at 316 Tennent Road, Marlboro Township, NJ 07751.

I, Daniel Penesso, am an RF Engineer contracted by AT&T to design radio communication systems.

My responsibilities include identifying signal coverage gaps in wireless telecommunications systems and assessing the ability of proposed antenna sites to adequately fill those gaps in signal coverage.

**PURPOSE**

This report is respectfully submitted by AT&T in connection with its application to permit the installation of antennas placed on a proposed Monopine and associated equipment ("the Facility") to be located at 316 Tennent Road, Marlboro Township, NJ 07751.

AT&T is in the process of upgrading its wireless network in Marlboro, New Jersey, as well as nationwide, from 3rd Generation to 4<sup>th</sup> Generation. This "4G" network upgrade will utilize LTE (Long Term Evolution) Ethernet technology to enable faster mobile broadband data speeds as well as enhanced voice capability. Wireless data communication has increased exponentially over the past few years along with the technological advancements used by medical professionals, businesses, students/universities, and the rest of the general public. This increased demand has impacted the quality of service offered to AT&T's customers in Marlboro Township. Without the proposed site, AT&T will be unable to provide adequate service in this area.

LTE can carry more voice, video, and data traffic than ever before. As these services increase, along with Internet Access, Internet Protocol TV (IPTV), and video-on-demand, AT&T's future 4G LTE Ethernet network will be crucial in dealing with these bandwidth intensive services and applications. In order to keep up with the growing demand for bandwidth and ensure its network is prepared to deliver these high performance services well into the future, AT&T must transition its 3G network to 4G LTE.

**INTRODUCTION**

The Federal Communications Commission ("FCC") has licensed and authorized AT&T to construct and operate a network of wireless telecommunications facilities in the State of New Jersey. Pursuant to FCC regulations and its FCC license, AT&T must expeditiously construct its network of wireless telecommunications facilities in order to provide the public with substantially seamless coverage for wireless services within its licensed area.

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DATE 6-29-30  
TIME 20-6711

Copies of AT&T's FCC licenses are attached as Exhibit 1.

AT&T's existing wireless network is not adequate to properly serve its customers who live in and travel through Marlboro Township. Particularly, without this facility, AT&T has a coverage gaps along Tennent Road, NJ-Route 18, and Newman Springs Road, Crine Road, Station Road. Residences and businesses would also experience a service coverage gap in the vicinity of the proposed site, as well as the surrounding local roads and areas within the vicinity of the premises. In order to provide seamless coverage in one of its search areas for Marlboro Township, and thereby meet its FCC obligations and the demands of its customers, AT&T has proposed to place its antennas on a proposed Monopine located at 316 Tennent Road. AT&T is proposing to place its antennas on the proposed Monopine so that it can provide ubiquitous wireless coverage within Marlboro Township.

### **PROJECT DESCRIPTION**

AT&T proposes a wireless telecommunications facility and associated unmanned equipment to be located on the proposed Monopine (collectively the "Facility") located at 316 Tennent Road, Marlboro Township, NJ 07751. The Facility will consist of sixteen (16) panel antennas placed on the proposed Monopine at centerline height of approximately 142ft. AGL.

AT&T was granted licenses to operate a network of wireless telecommunications facilities in the State of New Jersey. An unserved area in Radio Frequency ("RF") signal coverage currently exists in Marlboro Township. An unserved area is characterized by the inability to originate or terminate calls on AT&T's wireless network. In this application, the targeted area proposed for service coverage is along Tennent Road, NJ-Route 18, and Newman Springs Road, Crine Road, Station Road as well as the surrounding local roads and areas within the vicinity of the premises.

### **THE PROPOSED FACILITY WILL COVER THE UNSERVED AREA/ALTERNATE SITE ANALYSIS**

The Facility will meet the primary objectives of AT&T's search area because it will provide LTE 700/850/1900/2100/2300 wireless signal coverage to a significant portion of one of AT&T's critical gaps in service coverage in Marlboro Township. In addition this site will also provide First Responder Network Authority (FirstNet), AT&T\* has been selected by the First Responder Network Authority (FirstNet) to build and manage the first broadband network dedicated to America's police, firefighters and emergency medical services (EMS). The FirstNet network will cover all 50 states, 5 U.S. territories and the District of Columbia, including rural communities and tribal lands in those states and territories.

This is a much needed investment in America's communications infrastructure to support millions of first responders and public safety personnel nationwide who protect and serve more than 320 million people across the U.S. This significant public-private infrastructure investment is expected to create 10,000 U.S. jobs over the next two years from AT&T's work for FirstNet. Today, first responders use commercial networks – the same ones used by consumers and businesses – for mobile data and applications. That can be an issue when a significant public safety crisis happens and commercial networks quickly become congested. It makes it difficult for first responders to communicate, coordinate and do their jobs.

Plus, first responders use more than 10,000 networks for voice communications. These networks often do not interoperate, which severely limits their ability to communicate with each other when responding to a situation.

FirstNet's mission is to fix this. Through this new public-private partnership with FirstNet, AT&T will deliver a dedicated, interoperable network and ecosystem that will give first responders the technology they need to better communicate and collaborate across agencies and jurisdictions – local, state and national. These tests involved the use of Forsk Atoll signal propagation testing. Forsk Atoll software is a predictive modeling tool. It identifies areas where sufficient coverage does and does not exist, by taking into consideration topography, vegetation, and other morphology, which may attenuate the radio signal.

When this site was located, predictive tests were performed to determine whether the site would provide sufficient signal coverage. Each site proposed by AT&T is intended to address network requirements for providing service and is designed based on the unique circumstances applicable to the area in question and AT&T's network. These circumstances include but are not limited to the area targeted to be served, the surrounding topography/morphology, types of buildings/structures in the area and numerous other factors. AT&T examines these factors as they relate to each site and designs its system accordingly. This site and location is particularly suited since the proposed structure fits within the existing network by which AT&T can utilize to provide the necessary ubiquitous wireless coverage within Marlboro Township. Without the proposed Monopine AT&T cannot obtain its needed coverage of service with the proposed height being the minimum height required to meet AT&T's coverage objectives.

The proposed installation on the proposed Monopine is necessary for AT&T to provide service in this area of Marlboro Township due to the need to provide coverage with no other means to collocate onto any other existing structure to do so in this search area since all other locations within one mile of this search area have been utilized by AT&T already.

Based upon these tests, a propagation map illustrating AT&T's existing signal coverage in Marlboro Township without the proposed Facility was prepared and is attached as Exhibit 2. As the map clearly demonstrates, there is a critical gap in service coverage in the portion of Marlboro in the vicinity of the proposal. A second propagation map illustrating AT&T's existing signal coverage in Marlboro with the proposed Facility was also prepared and is attached as Exhibit 3. A third propagation map showing only AT&T's proposed coverage from the proposed facility is attached as Exhibit 4. This map clearly demonstrates that the proposed Facility will provide service coverage in the community of Marlboro Township, as well as to the local roads in the vicinity of the Premises.

Overall, the proposed site will cover an additional 3.72 square miles of in vehicle coverage in the Marlboro Township. A table of existing and proposed AT&T sites within Marlboro Township and neighboring municipalities is attached as Exhibit 5.

In addition to covering the roadways mentioned above, the wireless telecommunications industry has seen a strong migration in wireless telephony to non-vehicular use in commercial and residential neighborhoods, such as the ones surrounding the proposed Facility.

We expect that residents, businesses and visitors to this area of Marlboro Township will all benefit from the services provided by the Facility.

Backhaul network to AT&T's switch will be provided by Verizon.

Without the proposed Facility, AT&T cannot provide service coverage to its customers mandated by its FCC license and the FCC's rules and regulations.

### **STATEMENT OF NON-INTERFERENCE**

AT&T operates its wireless network in compliance with its FCC licenses and FCC rules and regulations concerning radio frequency emissions and/or radio frequency interference ("RFI"). AT&T's equipment utilizes 700MHz, 850MHz, 1900MHz, 2100 MHz and 2300 MHz frequency modulation and operates in the LTE (700MHz), Cellular (850 MHz), PCS (1900MHz), AWS (2100MHz) and WCS (2300MHz) class of service. While we cannot guarantee that the operation of our network will not cause harmful interference with other wireless users, the possibility of such interference, if any, is extremely remote. With regard to governmental users, this is especially true because of the significant differences in frequencies between our proposed installation and those frequencies used by local police, fire and EMS departments.

In the unlikely event that interference does occur, AT&T agrees to abide by its existing policy of fully cooperating with the entity experiencing interference to identify and correct, to the extent reasonably possible, any issues caused by its installation.

### **COMPLIANCE WITH FEDERAL EMISSION STANDARDS**

In regard to power density analysis, AT&T has prepared an emissions report in order to determine the potential public exposure to Radio Frequency energy surrounding the proposed Facility and to ensure that the proposed Facility would conform to all Federal and State health and safety standards. Worst-case assumptions were used in order to provide a conservative analysis and to ensure that actual values would be lower than those determined therein. That analysis indicates that the maximum level of Radio Frequency energy to which the public may be exposed due to the proposed Facility will be below all applicable health and safety limits, including but not limited to the FCC, ANSI, IEEE, NCRP and the State of New Jersey.

**CONCLUSION**

It is my professional opinion that (1) Without this facility there will exist an un-served area of Radio Frequency signal coverage in the portion of Marlboro Township where AT&T proposes the Facility; (2) Due to the topography and morphology of Marlboro, the proposed location represents the best available location for the Facility; and (3) The suitability of the proposed location has been confirmed by reliable computer modeling.

Therefore, it is respectfully requested that the Marlboro Township grant AT&T's Application in order to allow AT&T to construct the proposed Facility and to thereby comply with the mandates of its FCC license and otherwise conform to the FCC rules and regulations for wireless telecommunications providers.

*Daniel Penesso*

Daniel Penesso  
AT&T RF Engineer  
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