

**MONTGOMERY TOWNSHIP ZONING BOARD  
MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY  
REGULAR MEETING  
FEBRUARY 28, 2017**

**MINUTES**

Chairman DeRochi called the meeting to order at 7:35 p.m. and read the opening statement which affirmed that adequate notice of the meeting had been posted and sent to the officially designated newspapers.

**BOARD MEMBERS PRESENT:** Chairman DeRochi; Vice Chairman Fedun; Mr. Kristjanson; Mr. O'Brien; Mr. Post; Mr. Voitach; Mr. Lopez-Lopez, Alternate #4

**ALSO PRESENT:** Mr. Drollas, Board Attorney; Ms. Goldman, Board Planner; Mr. Cline, Board Engineer; Dr. Eisenstein, Board RF Engineer; Mr. Palmer, Zoning Officer

**I. SALUTE TO THE FLAG**

**II. RESOLUTION**

**Case BA-09-13**                      **Applicant: Sunoco, Inc.**  
Block 35004 Lot 1  
Extension of Approval

Zoning Officer Palmer noted a correction to the date the application was approved.

A motion to memorialize the resolution as amended was made by Mr. Post and seconded by Mr. Kristjanson.

The motion carried on the following:

Ayes: DeRochi, Fedun, Kristjanson and Post

Nays: None

**III. APPLICATION**

**Case BA-03-16**                      **Applicant: New York SMSA, LP d/b/a Verizon Wireless**  
Block 20001 Lot 6  
Use Variance, Height Variance, Bulk Variance and Preliminary and Final Site Plan  
Expiration Date – 4/19/17  
Affidavit of Notification and Publication Required

Notice was found to be in order. Frank Ferraro, Esquire represented the applicant.

The applicant is seeking a use variance, height variance, bulk variance and site plan approval to install a new FCC licensed telecommunication facility at the Nassau Racquet and Tennis Club. This area of the Township is a problem for Verizon Wireless in terms of coverage and capacity. The application proposes a 128 foot tall stealth monopine and a 40 foot by 60 foot fenced leased compound in front of the existing building. The facility will be located within an existing treed location. There will be twelve Verizon antennas located at the top of the monopine with locations for three other colocators. A use variance is being requested because the site is within the R-2 zone where telecommunication facilities are not permitted. Since the facility is not permitted in the zone the wireless facility provisions with respect to monopole height do not apply and the maximum permitted height in the zone is 35 feet. Bulk variances are needed for lot coverage to allow an increase to 21.7% where 21.3% exists and 15% is permitted, principal building coverage of 12.4% where 12.3% exists and 10% is permitted and fence height of 6 feet where 4 feet is permitted.

Dr. Bruce Eisenstein, Zoning Board Radio Frequency Consultant, was sworn in.

David Stern, the applicant's Radio Frequency Engineer, was sworn in. Mr. Stern gave the Board his qualifications and was accepted as an expert in Radio Frequency engineering. Verizon Wireless has four FCC licenses under the name New York SMSA, L.P. They have an original 800 MHz license, a PCS license at 1900 MHz, a 700 MHz network and a 2100 MHz license. The RF Analysis and Report dated December 23, 2015 was marked as Exhibit A-1. The RF Emission Study dated December 23, 2015 was marked as Exhibit A-2. Test equipment was used to measure the signals to verify they have issues that will manifest itself into a significant gap in coverage. Almost 50% of the voice traffic is now carried on the 4G data network through VOIP. The network needs to be built out to support and expand the 4G data. The capacity issues will exacerbate the coverage problems. The CDC estimates 49% of the US households are wireless only and the FCC estimates that 70% of all 911 calls are made from wireless phones so the sites that are being built now are

focused on both commercial and residential areas. Mr. Stern briefly discussed the RF Analysis Report. The report contains the existing and proposed Verizon Wireless sites in the Township as well as the overall comprehensive plan for the Township and how coverage and capacity will be met.

The applicant marked the following exhibits:

Exhibit A-3 - existing coverage map without Belle Mead 3

Exhibit A-4 - existing coverage map with Belle Mead 3. Both Exhibit A-3 and Exhibit A-4 are propagation maps that were generated using industry standard computer modeling programs.

Exhibit A-5 - Verizon drive test data. The top figure is the 2100 MHz test and the bottom figure is the 700 MHz test.

Exhibit A-6 – Sprint drive test data. The top figure is the 1900 MHz test and the bottom figure is the 800 MHz test.

Exhibit A-7 – AT&T drive test data. The top figure is the 1900 MHz test and the bottom figure is the 700 MHz test.

Exhibit A-8 – T-Mobile drive test data. The top figure is the 2100 MHz test and the bottom figure is the 700 MHz test.

Exhibit A-9 – Capacity data on the traffic of the network to the end of January 2017.

Exhibit A-10 – Analysis of covered households at various tower heights.

Exhibit A-11 – Two mile search ring and the existing structures around the proposed location.

Exhibit A-12 – Copy of the Montgomery Township First Priority Location Map with colors added by the Applicant

Exhibit A-13 – Montgomery Township Zoning Map

Exhibit A-14 – Map of the areas within approximately 2 miles of the Tennis Club where there are no above ground utilities

Exhibit A-15 – Identification of the roads and where utility poles are and what the status of those poles are. Testimony will be provided as to which poles are and are not usable for installation of a DAS system.

Mr. Stern referenced Exhibit A-3. Exhibit A-3 is a topo map of the area and shows the existing reliable service for Verizon Wireless. The existing sites are the monopole on Reading Boulevard, the water tank on Concord Lane and the water tank in Rocky Hill. A small cell site or capacity fill site is proposed in the Harlingen Reformed Church steeple. The proposed site will fill in a larger part of the white area with a new monopole at the Tennis Club. The gap in reliable service is approximately 3 miles north to south and 2 miles east to west. Reliable service means a wireless device or cell phone can be used anywhere in the network, both in-vehicle and in-building. The signal levels they are trying to achieve to ensure reliability are minus 95 dBm RSRP. At minus 115 dBm the data and voice calls start to fall apart. They need to have better than the minus 115 when indoors. A single family home of wood construction with a little bit of brick has about a 10 dB loss so this assures a minus 105 dBm in-building. The goal for Verizon is to have minus 95 on-street and minus 105 in-building. The area around the subject site shows unreliable coverage. Verizon has an obligation to build out the network and the way to handle capacity is building out the AWS system. The green on the map signals minus 95 or better and the white on the map signals minus 95 and worse. The signal deteriorates as you move from the source. The terrain also impacts the coverage which explains why there is green in some areas and white in others.

Mr. Stern referenced Exhibit A-4. Exhibit A-4 adds to Exhibit A-3 by showing coverage with the center of the proposed new antennas at 120 feet above ground level. The focus is the area of the Township north of Princeton and Rocky Hill, as close as possible to the canal. A crane test was performed in December, 2015 to gage the heights the system needed to be. The heights tested were 100, 120 and 140. The difference between the 120 and 140 was not significant enough to justify the 140 height. Going from 120 to 100 had a significant enough drop in coverage to determine 120 was the right height to fill in the gap. No additional Verizon sites have come on air since the crane test was performed. Based on the propagation shown on Exhibit A-4 this new site is required.

Mr. Stern referenced Exhibit A-5. On June 2, 2016 Verizon measured the drive tests again and found that Verizon has not put the AWS on the air. Sometime between April and May of this year Verizon will launch the AWS at the three existing sites. The exhibit shows the actual measurements from the 4G LTE coverage currently servicing the area. The colors represent different signal strength with blue being the best, green being good, yellow being at threshold and red being where the calls fall apart. The blue and green equate to the green on the map and the yellow, red and black equates to the white on the map.

The propagation characteristics of AWS as compared to 700 MHz are about a 9 to 10 DB difference. When AWS goes on line there will be a color shift down 10 DB so blues will go to green, yellows will go to red and reds will go to black. This site will address the additional 4G capacity and will also improve in building coverage in the area.

Mr. Stern discussed Exhibits A-6, A-7 and A-8. The exhibits show the drive test data for the other wireless carriers and shows there is a gap in coverage for them as well.

Mr. Stern distributed paper copies of Exhibit A-9 to the Board. The exhibit is entitled "New York SMSA, Limited Partnership, d/b/a Verizon Wireless, Belle Mead 3 Sector Traffic Data, History and Projections for February 2017". The data included in the RF Report was to the end of 2015. Exhibit A-9 updates the data through February 2017. The data is for two the sectors, Reading Boulevard and Rocky Hill. The data is known as forward data volume or how much data passes through the cell site in a busy hour. The red line is the capacity threshold line on a specific date which can move up and down and is different for every site. The red line is determined by where the users are and where they are using the data with respect to the site. When comparing the Rocky Hill Gamma information in the original report, Exhibit A-9 shows the actual trend is an upward trend toward the red line at the end of 2015. The capacity of the system was reached.

The Board questioned Mr. Stern about the Exhibit.

Mr. Stern testified the trend lines are up so high because 50% of the traffic today on voice is on the LTE network. The other half is still on the CDMA network. Verizon is looking to migrate all the traffic off CDMA onto the network so a significant boost in the amount of capacity on the network in order to handle the capacity is needed. During the busy hour as capacity goes up the users at the fringe of the network get dropped off. The quality of the data gets worse over time as more people are pushed from the older technology to the new technology. The coverage gap is exacerbating itself because the capacity issues. The capacity threshold was hit before the end of 2016. When the AWS is put on air capacity close into the sites will improve although it will not help in other areas.

Dr. Eisenstein testified that when they swap out the antennas and the radios that are in the cabinets underneath that give them more capacity because it gives them extra bandwidth to use.

Mr. Stern testified that if the AWS is launched in May by September they will be back in the capacity crunch. The site at Nassau Racquet is needed to offload the capacity.

The Board took a five minute recess.

Mr. O'Brien asked about reliable service. Mr. Stern testified the goal is to make sure there is reliable service so that someone in a house or in a car can make a 911 call.

Dr. Eisenstein testified that the new standard reflects the fact that they are really operating data and with data it is not the power but the bit error rate. It is the signal-to-noise ratio. The lower the power the receiver gets, the more the noise affects the bits that are going through, the more errors in the bits and it requires a re-transmission. When you get far enough away from the site everything slows down or the bit error rate gets so high that it throws you off the network. LTE stands for Long Term Evolution and that is what all the carriers see as the long term trend. Everything, including voice, will be data. There will be no such thing as an analog signal and when that happens the neg 95 will probably be appropriate. Neg 115 is the absolute minimum and you can't design at the minimum. 20 dB is a good design point. The propagation plots are done at an appropriate power levels for the kind of served they have to provide.

Mr. Stern testified about alternate sites using Exhibits A-11, A-12 and A-13. The two mile circle is identified where there are existing wireless sites within the area. The Rocky Hill and Belle Mead water tank are within the circle and just outside the circle are the public safety tower at the Municipal Complex and the proposed location at the Harlingen Reformed Church. There are no existing tall structures to act as an alternative to the proposed monopole. Mr. Stern referenced the Priority 1 locations within the Township on a map that he added colorized dots to the locations. The two red dots are two of the permitted locations – the monopole by the ballpark and the water tank. The blue dot is the proposed tennis club site. The others are highlighted in yellow. If any of the sites had been more than 100 feet then they would have been considered more. The silos at the Matthews Farm, although only 30 feet tall, would duplicate what is being done at the Harlingen Church and you would only get a 1,000 foot diameter circle around the site. The Montgomery United Method Church has a 30 foot steeple so you would get the small-cell effect of about a thousand feet and it would not fill the gap. The Skillman Dairy Farm has 30 foot silos which would provide the thousand foot circle and is too far to serve the area. Even using a combination of these sites would leave out a big chunk of the coverage area. These sites would be appropriate for small nodes at a later date if there is a capacity issue in those areas. None of the first-priority locations are located appropriately or tall enough to address the gap in coverage.

Mr. Stern discussed the second priority locations and referenced the zoning map. There are four zones within the Township that are second priority; LM, LM/SI, PPE and REO-1. The Reading Boulevard tower is within the PPE zone. The two properties within the LM and LM/SI zone are too far away from the target coverage area. Verizon has contacted the Board of Education which is within the PPE zone and they are not interested in having a tower on their properties. The REO-1 zone is located to the south of Orchard Road and Verizon is focused on the area north of Orchard Road. The south side is too close to the Rocky Hill site. The Convatec site and Aja site are within the bounds of what could work for Verizon.

Mr. Ferraro noted that Verizon sent letters to the owners of Convatec, Aja and Board of Education about a year ago and there was no response back from any of them. There has been some other outreach and there will be testimony offered by another witness.

Mr. Stern testified the towers at the REO properties might have to be higher than what is proposed at Nassau Racquet due to the topography of the site. The proposed site is particularly suited since it is in the center of the gap area. The REO locations are to the south end of the gap so something else might be needed in the northern gap area. All the second priority locations are either not suitable or not available.

Mr. Stern discussed the Radio Frequency Emissions Compliance Report (Exhibit A-2). The site is analyzed and compared against the FCC standards for an installation like this using FCC's Office of Engineering Technology Bulletin No 65. The calculations show they are at approximately 0.4 percent of the FCC so they are 200 times below the FCC standards for a facility like this. They are a thousand times below the New Jersey Statute.

Dr. Eisenstein testified that the calculation that is specified in the OET 65 Bulletin was done correctly in the report.

Mr. Stern testified that they assumed all antennas were operating at maximum power, that there were no losses in the cable going down to the transmitter and that it would be 24 hours a day seven days a week. All of the equipment that is being used is FCC approved equipment.

Dr. Eisenstein said it's at the absolute maximum and those conditions would never be realized in practice. He concurred with the conclusions in the report.

Mr. Cline asked if the other carriers would be providing similar equipment and if the numbers calculated for Verizon could be multiplied by four to see what the max power on a full loaded tower would be. Mr. Stern responded he would use between half and 1 percent. As you get lower you're getting closer to 1 percent. All four carriers loaded up at maximum power would be between 2 and 3 percent of the FCC.

Chairman DeRochi opened the meeting to the public to question Mr. Stern.

Michael Viggiano, 58 Charleston Drive, stated he was a licensed professional engineer. Mr. Viggiano pointed out that the certificate from the NIST should be part of the paperwork presented to prove the equipment used was calibrated. Mr. Viggiano talked about the variances the applicant is seeking.

Robert Kirch, 62 Charleston Drive, asked if the cable companies like Xfinity have any effect on drawing off Verizon's data. Mr. Stern did not know. Mr. Kirch asked if the migration of voice to data is a requirement or a company decision. Mr. Stern replied that in order to carry the load, the company decision is to migrate all subscribers off of the older technologies to the new technologies. Mr. Kirch asked why the soccer field which is in the middle of the area that is not covered was not considered. Mr. Stern said they would be permitted if owner approval is granted. Mr. Stern would have to propagate it to see if they would serve.

Chairman DeRochi said the Board would be very interested in an analysis of the soccer fields.

Dr. John Hopper, 57 Opossum Road, asked if there would be an opportunity to question Verizon's medical representative on the recent publications particularly on its effect on children.

Mr. Ferraro said there is no medical expert. Verizon is not presenting any medical evidence to the Zoning Board. It would be very improper for the Board to consider any perceived health effects from radio frequency emissions in its deliberations on the application. The Telecommunications Act of 1996 does not allow local boards to take those types of issues under consideration. If Verizon meets the FCC rules it is the end of the discussion.

Mr. Drollas said the issue raised is compelling for a number of people but the extent to which it can be considered by the Board is limited. It would be a good idea for the applicant to provide the Board with a little more detailed explanation of how issues like this should or should not be considered and be responsive to issues raised by Dr. Hopper.

Dr. Hopper referenced Exhibit A-5 and asked if his interpretation that the signal strength at Nassau is at a very good level so a tower is not needed at this location.

Mr. Stern replied that the plot that was shown was at 700 MHz. The blue dot on the exhibit is the site location not the signal strength. The goal of this site is not only to fill in the gap but to address the AWS band in the area. At 700 MHz they are approximately 5dB higher than the threshold that is needed for the site. The projection is that they will be about 10dB below that threshold with the AWS.

Dr. Hopper said the literature for the prior application at this site said the reason for the height was because of the 70 foot high trees. If the structure was constructed where there are shorter or no trees a 50 foot structure would be needed. He asked for clarification as to why they are proposing the 128 foot height.

Mr. Stern replied that he needs that height to fill the gap. With the height as proposed he can cover the gap with one site instead of multiple sites. If it was flat and if it didn't have trees he could probably go with a lower site. Even if it is located at a site that has no trees it needs to be installed at a height to get the signal over the trees that are 5,000 feet away.

Ann Laplante, 36 Charleston Drive, asked how come the measurements aren't taking into account the fact this is going over homes that would be well beyond the 6 feet off the ground.

Mr. Stern replied that when the calculations are done, they do the calculations from 0 to 600 feet away from the proposed location and they do the measurement point at 6 feet. He can provide additional measurements to show that the measurement would be at 16 feet, which would be the average height of someone standing in the second story of the home. He believes the number will still be very close to the .4 but it will be less than 1.

Chairman DeRochi asked if the crane test could be scheduled before the leaves are on the trees.

Mr. Ferraro suggested the test be conducted from 8 am to 12 pm on March 18<sup>th</sup> and 19<sup>th</sup> weather permitting with March 24<sup>th</sup> and 25<sup>th</sup> as alternate dates. A waiver is needed to allow the crane to be located on the driveway instead of the exact tower location in order to preserve the existing trees. The balloon test, which will occur at the same time, will be in the exact location of the tower.

Ms. Goldman will accompany the applicant's planner when the visual analysis is conducted.

The application was continued to the March 28, 2017 meeting. No further notice is required.

#### **IV. MINUTES**

##### **February 21, 2017 – Regular Meeting**

A motion to approve the minutes was made by Mr. Post, which was seconded by Vice Chairman Fedun. The motion carried on the following roll call vote:

Ayes: Fedun, Kristjanson, Lopez-Lopez, Post, O'Brien, Woitach and DeRochi

Nays: None

There being no further business to come before the Board, the meeting was adjourned at 10:40 p.m.