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January 8, 2018

William Rice, Chairman
Village of Nelsonville Zoning Board of Appeals
258 Main Street
Nelsonville, New York 10516

RE: The application of Homeland Towers, LLC, New York SMSA Limited Partnership d/b/a Verizon Wireless ("Verizon") and New Cingular Wireless PCS LLS ("AT&T") collectively ("Applicants") to construct a wireless telecommunications facility at 15 Rockledge Road, Village of Nelsonville, New York

Dear Chairman Rice and members of the Zoning Board of Appeals:

The undersigned is now in receipt of three new submissions with respect to the above referenced application. Specifically, the undersigned has received the following documents:

Supplemental Report Regarding the Philipstown Cell Solutions Group Report, Site I.D. "Nelsonville," prepared by Adam Fehan, Sr. RF Engineer, PierCon Solutions, LLC, dated December 18, 2017 ("Csquared Report")

Letter to your Board from CMS, dated December 29, 2017, prepared by Richard A. Comi, owner CMS. ("CMS Report")

Letter and attachment dated January 3, 2018 prepared by Adam Feehan, Sr. RF Engineer PierCon solutions, LLC.

As the independent radio frequency consultant retained by your Board, it is proper that an evaluation of the documents be prepared for your Board for your consideration in the matter. As you may recall an opinion of a "Statement in Opposition" dated November 28, 2017 was prepared by the undersigned and transmitted to your Board on December 9, 2017.

The PierCon report deals primarily as a response to The Cell Solution's Group submission of November 28. In this report Mr. Fehan spends a considerable amount of time explaining the overall function of modern LTE systems. His explanations are no different from those of this engineer with respect to how VOLTE operates and what bands is deployed on. Curiously, however, he does not agree that Verizon will not employ 850 MHz system (no matter what technology is utilized) as this engineer believes from learning from reviews in countless other

recent Verizon applications. With that exception, those portions of his report dealing with technology are reasonable and accurate.

Mr. Fehan spends a considerable amount of time rebutting the “crowdsourced” maps of ROOT Metrics and Sensorly. Crowdsourcing for coverage has some value and this engineer notes that it has been given some consideration in other applications he has reviewed. None the less the nearly gold standard remains the actual calibrated drive test. The opinion he provides on ROOT Metrics may not be totally accurate. At its web site, ROOT Metrics provides the results of crowdsourced measurements from its users/subscribers. If one were to view this on a computer and mouse click on anyone of the pixels such information as technology utilized (2G,3G or LTE) as well as data speeds recoded, signal strength and the number of data points (measurements). Moreover, as it is the device reporting the signal strength it would report the signal level for the LTE signal as RSRP and the signal level for the 2G or 3G as RSSI, as that is the way the device “sees” the signal. There is yet another crowdsources site named Open Signal. It is interesting to compare the results of the two sites for similarity of results. One issue with such sites is that the results were probably gathered in vehicle (“INV”) as opposed to in building (“INB”). As was noted in his first report to your Board this engineer did note from a review of Exhibits A1 and A1Z that there appeared to be reliable INV coverage in most of the areas of Nelsonville, but a dearth of INB coverage in the area.

Mr. Fehan then goes on to the letter to your Board regarding computer modeling claims prepared by a Dr. Morrison. It is unfortunate that those claims were made. It would certainly be unscrupulous and not in good engineering practice to prepare false or misleading evidence about an engineering fact. It must be assumed that the data utilized for such calculations of coverage (terrain, power transmitted, antenna characteristics and height above ground) all of which can easily be verified were utilized. The only variable that can be easily manipulated is the required signal strength depicted, in this case -95 dBm RSRP and -105 dBm RSRP. In fact, this engineer in many of the Verizon Wireless applications he has reviewed has challenged the use of even stronger signal strengths depicted by Verizon Wireless. Such stronger signal strength would have demonstrated significantly larger gaps in coverage. In the application before your Board, Verizon Wireless has utilized the correct signal strength levels for suburban/rural areas such as Nelsonville.

As this engineer has noted in most if not all of the applications he has reviewed in over 20 years, drive tests either of the existing system or the proposed are nearly the gold standard for determining coverage.¹ So as to end this issue Mr. Fehan has now submitted existing system drive tests for the area in and around Nelsonville. Exhibit B of his report shows the results of those drive tests. It is clear that there remain gaps in in-building coverage in much of the area around Nelsonville as well as areas of unreliable coverage in a number of other areas, especially along route 301. The only issue that this engineer can note about this drive test is that it would have been helpful if Mr. Fehan has also presented a map on the same scale and detail presenting

¹ Please note that in an earlier report on the application prepared by this engineer, he noted such. As a result of his review of a similar application in nearby Philipstown where both drive and calculated coverage were presented he found that the calculated coverage presented in this matter could be relied upon for accuracy.

the calculated coverage results. A direct comparison of the two should indicate significant agreement of the results, ending the claim about manipulated data.²

Your Board can now turn to the CMS Report. It can only be commented that this is an unfortunate piece of work. This engineer stands by the statement with 850 MHz utilization at new sites. Once again, in countless applications that this engineer has recently reviewed (easily the past 2 years) Verizon Wireless is not implementing 850 MHz systems. The technology is nearly obsolete; the band is under a transition process where it is no longer readily available in areas where it did have coverage. The issue of whether there is 850 MHz coverage is not the issue in the proceeding. Moreover as 850 MHz has even poorer coverage than 700 MHz (a fact that even Mr. Comi must agree to) any presentation of 850 MHz systems would show even poorer coverage.

Now that the drive tests have been presented with good nexus between calculated and drive, perhaps even he will agree that the close proximity drive tests in Philipstown were evidence enough of the accuracy of the calculated presentations in Nelsonville. Mr. Comi's claim regarding Verizon Wireless engineers' claims of -105 dBm is sufficient for in-building coverage have no basis. It would be most helpful if Mr. Comi could provide any information on these municipalities and the Verizon Wireless applications.³ Your Board should request such information.

Much of the opinion of Mr. Comi with respect to data and voice is flawed at best. It is clear that he does not understand the operation of a CDMA system (850 MHz) and an LTE system (700 MHz, 1900 MHz and 2100 MHz). CDMA is a voice rich system to say the least. Any data that may be utilized (voice is not transmitted in this system as data such as in the LTE system) will be limited at best to SMS (text) or basic web browsing at incredibly slow speeds. The answer to Mr. Comi's question "why Verizon needs ubiquitous in-building 700 MHz coverage in Nelsonville?" is quite simple. It is needed to provide high speed data (which includes voice which is now predominantly transmitted over LTE as well as other IP services) for in building needs in the Village.

The capacity issue raised in his report is mute. It has now specified by Verizon Wireless that this application is not for capacity issues. The claim by Verizon Wireless, while somewhat surprising to this engineer, really has little affect in this application. The fact remains, somewhat like the chicken and the egg. If there is no reliable coverage can there be reliable data? Of course, without coverage there can be no data, whether its capacity has been exceeded or not. Not to be a contrarian to Mr. Comi, his somewhat "legal" opinion of the prohibition of service, his opinion may be somewhat antediluvian. This engineer is participating in two long running

² It is also quite informative to compare the results of Exhibit B to the maps presented in any of the crowdsourced maps noted in the report. Once again, there is a reasonably good nexus between them.

³ This engineer fights constantly with Verizon Wireless on its use of signal strengths. In nearby Westchester county it specifies -85 dBm for in building and -95 dBm for in vehicle. Nearer to New York city it specifies -75 dBm for in building and -85 dBm for in-vehicle. There is a continuing fight to have Verizon Wireless utilize the proper strengths for the area it is proposing coverage. While it ultimately agrees (under protest) to utilize the signal strength levels this engineer requires, it continues to claim that the even stronger signal strengths are required. This engineer will also personally attest that he has never seen Verizon Wireless propose in-building or in-vehicle coverage at signal strengths less than those specified in the application before your Board.

court cases (one reviewed and returned by the Supreme Court of the United States) where the lack of sufficient capacity is the cornerstone of the plaintiffs argument. While this engineer has no opinion in this case whether it is a capacity issue, it now clear from Verizon Wireless' statement that the need for facility is coverage related.

Mr. Comi goes on to opine on the use of an alternate site or DAS. It appears that the use of the 50 Fishkill Road site may be off the table now. With respect to DAS, such systems are primarily designed for high population/structure areas where coverage is limited to "pockets" of poor signal coverage. Such is not the case here where the lack of coverage is wide spread and over a very large area of significant terrain obstructions. Moreover, the concept of DAS in any community now raises the possibility of many, many residents objecting to the DAS nodes being placed in their "back yards" or on the street in front of their homes as opposed to fewer residents in the immediate vicinity of the proposed macro site.⁴

There remain two issues associated with Mr. Com's report that should be commented on: (1) this engineer was retained by the real estate group (Unicorn Contracting Corp) that purchased Butterfield Hospital and planned to development the site as a senior residential community. Its concerns dealt with the ability of the structure to stealth the AT&T antennas and issues associated with radio frequency exposure to its residents. Unicorn ultimately decided to not move ahead with AT&T's co-location. While AT&T did propose 1 channel of 850 MHz operation at the site, the majority of the equipment was for 700 MHz and 1900 MHz (the LTE bands). Please note that this was in 2015 long before AT&T basically shut down the 850 MHz GSM system. It is not clear whether AT&T is even proposing 850 MHz at the Nelsonville site. The answer to the question as to "Why does Nelsonville have to replace coverage for a site that was commissioned in Cold Spring?" is quite simple. Radio frequency coverage knows no geo-political bounds. It is limited to free space attenuation and terrain, not town or city boundaries. It is interesting to note that much of the existing, albeit insufficient coverage, in Nelsonville comes from sites in the West Point area and Philipstown; (2) Mr. Comi's offer to cross examine the applicant's engineers is quite altruistic. Perhaps he would be available to be crossed examined on his knowledge of the technical operation and specifications of LTE systems as well as the technical aspects of radio frequency propagation.

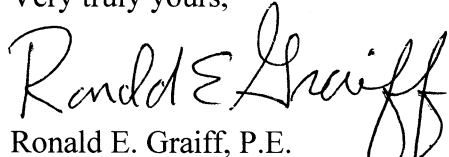
The letter from PierCon deals with a misunderstanding regarding the need for the facility. It was this engineer's belief, as is in the majority of Verizon Wireless applications reviews that it was claiming, in addition to coverage, that there was capacity issues. Mr. Fehan notes that it is poor coverage that is the purpose of the application. So as to support that claim, he has submitted to charts of so called Key Performance Indicators ("KPI"). The first document "Setup Failures for McKeel's Corners Sectors" demonstrates the inability of the McKeels Corner's site to allow a call to be initiated on different sectors of that site. Note that the Alpha sector generally points north, the Beta Sector faces south east and the Gamma Sector directs its signal to the south west. From that document it may be seen that the Gamma sector (directing its energy towards Nelsonville) does on occasion suffer from very high setup failure, both at 700 MHz (blue triangle) and 2100 MHz (red rectangle). The second document "Drop Calls for McKeel's

⁴ This engineer has recently participated in two DAS proceedings (Rye, New York-96 nodes and Wesley Hills, New York-21 nodes) where the opposition filled, in one case, a hotel ballroom. The opinion of all of the objectors was that a macro site (tower) would better serve the communities' interests.

Corners Sectors” is somewhat more telling. Dropped calls are typically greater than 10% and for the Gamma sector as high as over 50%. Clearly this level of dropped calls may be unacceptable for a carrier and be well beyond what the FCC notes as “service somewhat above mediocre.” These two documents demonstrate that coverage in the area is poor and that relief is required.⁵

This review and comment is based on the information presented and to the best of the undersigned’s knowledge and belief that the information contained there is true, accurate and complete. Should your Board have any additional questions, please feel free to contact the undersigned,

Very truly yours,


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⁵ Please recall, however, that Verizon Wireless proposes to decommission the McKeel’s corners site if and when the site proposed is approved and placed into operation. It is unclear why it would propose to do so as it is providing coverage (albeit limited) to the area and its loss may also impact total coverage in the area. Verizon Wireless should be directed to respond to this issue.