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May 12, 2014

Roberta Brien, Chairwoman
Zoning Board of Appeals
Town of Paxton
697 Pleasant Street
Paxton, MA 01612

RE: Application of New Cingular Wireless PCS, LLC ("AT&T") to construct a new personal wireless facility ("PWS") at 196 West Street, Paxton, MA.

Dear Chairwoman Brien and members of the Zoning Board of Appeals:

I am in receipt as of Friday, May 9, 2014 at 6 PM Eastern Daylight Saving time, a PDF of the second supplemental submission on behalf of AT&T, dated May 9, 2014 responding to questions and comments of my report to your Board dated April 3, 2014, prepared by Dan Goulet, C Squared ("C Squared") Systems, LLC.

Once again, here we are on the virtual eve of your next meeting, and AT&T through its attorney and consultant has waited over a month to respond to my April 3 report to your Board and has dumped this latest filing (electronically, and not even a hard copy) on me allowing less than 2 days to respond to your Board. As AT&T is well aware, I will be traveling to Massachusetts on Tuesday of this week to attend two other AT&T hearings in Woburn and Hingham. In all of the years that I have been involved in such applications with hundreds of applications, tens of attorneys and applicant consultants representing the applicants and tens of applicants, I have never been supplied such evidence/testimony on the eve of the hearing, let alone only in an electronic copy. Most, if not all, of the Boards that I have assisted in reviewing such applications require, at a minimum, at least 10 days or 2 weeks for evidence/testimony submission so that its consultants have a reasonable amount of time to review and prepare a comprehensive report. It is unclear to me what has taken AT&T's consultants so long to provide this "oh yes, we made a mistake," and other excuse laden testimony/ evidence in this matter. None the less I will attempt to respond with this report to your Board so that it may be able to make a reasonable decision on how to continue.

Mr. Goulet now admits that the coverage thresholds were incorrectly noted in his first submission. He goes on to state "In order to avoid confusion, C Squared has now revised Exhibit 2..." He sure has! My report to your Board dated April was based on the finally

received hard copy of his submission. That submission contained all of the coverage exhibits/plots referenced both in that report and the current report. It is interesting, but not noted by me at the time, that the scale of the maps is not the same. Exhibit 2 of Mr. Goulet's March 25 submission has a scale in the lower left hand corner of 1 mile = 1 and 5/8 inches. The remaining exhibits have a scale of 1 mile = 1 and 1/2 inches. It is therefore impossible to compare this now claimed correct Exhibit 2 to the remaining Exhibits that may demonstrate the alleged existing 850 and 1900 MHz UMTS coverage. But wait, there's more! Mr. Goulet states that: *C Squared has confirmed that the coverage plot presented was prepared using the correct coverage threshold for AT&T's UMTS coverage, but was mislabeled with the LTE coverage thresholds.* It remains unclear how such a bold statement can be made. Nowhere in the previous submission or this submission, I believe, are the results of "scan drive tests," (either UMTS or LTE) that is actual drive tests of the existing system. Such scan tests overlaid on the calculated coverage indicated in Exhibit just may put to rest the question regarding validity and the accuracy of the presentation. Sorry, but his claim rings hollow.

Mr. Goulet in his next paragraph attempts to respond to my concern with respect to the differences in coverage between the 850 MHz system and the 700 MHz system. While he graciously acknowledges that I am partially correct, he then goes on to discuss why I am not correct. The truth is, and I am not opining here but stating fact, that indicated coverage between 750 and 850 MHz (whether in the real world or the calculated world that is depicted) when power is normalized (as I had stated) will be the same. The model cannot resolve and is not accurate enough to present the difference in free space attenuation between 100 MHz or less while the clutter remains the same. Moreover, this entire application has been confused (to make it nearly impossible for your Board to understand) with the addition of this new "LTE" approach to coverage.

The signal strengths depicted for the UMTS(3G)/GSM, -83 dBm to -93 dBm are utilized by all carriers as well as being supported by standards setting organizations such as the European Technical Standards Institute in their Report ETR 364. The signal levels depicted for the AT&T LTE system (greater than -93 dBm) have not been supported by evidence (other than C Squared's claim that that is the correct signal strength) and may just be an AT&T idea of what it needs, notwithstanding the lack of evidence. Moreover, in the 5 other AT&T applications I am reviewing (2 in Massachusetts and 3 in New York State), AT&T has supported its need with the -83 dBm (actually -82 dBm in some cases, but not a significant difference). It remains unclear why Paxton was blessed with this new form of application justification.

I make a point of all of this somewhat confusing and possibly conflicting evidence because of the announcement of a case the Supreme Court of the United States will hear. In October of this year the Court will hear T-Mobile Vs Roswell (GA) in a case where the town of Roswell denied a T-Mobile application and gave no reason (technical or otherwise) for the denial. As a consultant to your Town, I have no idea (nor does it impact my review) how your Board will act on this matter, but my job is to technically vet the application. Should it deny it and there is subsequent litigation, my purpose is to make a complete technical record of the evidence submitted so that a judge can later hopefully understand and utilize.

Mr. Goulet in his response “frequencies and labeling of exhibits” speaks of “shorthand” as a generally accepted practice. While I am not aware of such an accepted practice, I am aware of the inconsistencies in evidence presentation, and apologies aside, evidence should, I believe, remain consistent while, of course, accurate. It remains unclear, especially in light of Mr. Goulet’s “tutorial” on frequency differences affecting propagation, if all that is presented is indeed equal and consistent.

In his response to drive tests maps, Mr. Goulet states: *in order to avoid any confusion, C Squared has revised the labels on these exhibits to correct them. As with the coverage plots mentioned above, it is important to note **that it is only the label that was incorrect**, and C Squared has verified that the proper inputs were used to generate the coverage depicted.* Only the label was incorrect? Please direct your attention to the label. Under “Plot Information” the original submission states: “850 MHz UMTS” while the new submission states: “850 MHz.” Is the Board to assume that this is also UMTS? As noted in the “Coverage Key” the depicted coverage thresholds have also changed to significantly different thresholds. If as he states the coverage thresholds are for LTE coverage, why not are the alleged LTE thresholds now indicated? Finally, although it appears that Mr. Goulet is claiming only a label has changed, even to this 67 and ½ year old electrical engineer, it appears that the map itself has changed. Please note the scale (notwithstanding what the legend states has changed. Street names now appear, for some reason North Brookfield has renamed itself to Spencer **and most importantly, the coverage has changed.**

Note, for example, in the original Exhibit 12, there is reasonable continuous coverage along what appears to be State HWY 31/West St, there now appear to be huge gaps in coverage along the same road. Notwithstanding the differences in Coverage Key signal levels, because of the inconsistency and incorrect labeling of the Key, it is impossible to gain any real supportable evidence from this presentation.

With respect to the new exhibits submitted Exhibit 16 and Exhibit 17, this review can only note the further confusion. The discussion that Mr. Goulet and I had on the telephone of “normalizing” such coverage goes, quite frankly, beyond the reasonable ability of a board such as yours to understand. Notwithstanding that comment, two observations should be included.

In Exhibit 1 of the original submission “AT&T Existing and Planned 4G Network and Surrounding Communities” the coverage depicted in Exhibit 16 (no matter how one looks at it) would strongly indicate that a new site will also be required in the Town of Paxton to provide reliable seamless coverage along Route 31 to the west and along Nannigan Road. While it is confusing that on this Exhibit 1, a site identified as MALH3093 is identified as an Existing Site, (in North Brookfield) in Mr. Goulet’s Exhibit 16 a site is identified as MAV3193 and appears to be in the same location although this time in Spencer. Please note that this existing site (if that is the case) provides no coverage to the area noted above, and if, indeed coverage is needed in that relatively large gap, it is this engineer’s opinion it will be, just as I noted in my previous report on page 2, paragraph 3: *this cell is an island.....a strong indication, as if one looks at the existing sites and remaining gaps, that Paxton will require another cell site in the future....say Nannigan Road and Route 31.* That fact remains unchanged.

With respect to Exhibit 17 Mr. Goulet presents coverage from alternate site MALOH4288T. I am not sure why this site is presented unless your board specifically requested detailed information on it as it is noted as a Town site. The site I questioned was MALO4388A, the site 0.2 miles to the west that was identified as being acceptable to AT&T. This site may also be more attractive to the Board or others involved in this proceeding. Without such coverage provided, it cannot be determined how this alternate site would affect coverage.

Finally if we can now address the Technology response in Mr. Goulet's most recent submission. He claims that because of the different frequency bands utilized by AT&T it cannot use such a single antenna (specifically something about B/C, D/E channels). A check of the FCC license data base indicates that AT&T, through a number of different licensees, all either owned or controlled by AT&T Corporation, is licensed to use these frequencies in all of Massachusetts. The frequencies are in the Cellular Band, PCS Band, AWS Band and the 700 MHz band A,B,C,and D). While I did not mention a specific antenna, examples that might be considered are a Commscope QBXLH-6565AVTM, a Kathrein (Scala) 800 10766 or even an Ericsson AIR 21,2.4M (with variants). These antennas cover every bit of the spectrum that AT&T has licensed in the Massachusetts area. In fact I am aware of two AT&T installations that are or will utilize antennas such as these. In Connecticut for example at site CT-2245, Mountain Road, Washington, CT, AT&T utilized Powerwave P90-14-XLH-RR antennas on a monopole extension. More recently in the Town of Hingham, Massachusetts, according to the Engineering Affidavit of Jobet Mariano, RF Engineer, AT&T, dated December 6, 2010 he states at paragraph 9:

Based on the radio frequency studies, reports and computer models prepared in connection with this Facility, it is my further professional opinion that AT&T would be able to achieve the coverage objective by filling these significant gaps in coverage through the construction of the Facility at the Site with quad band antennas which send and receive both 850, 1900, 700 and 2100 MHz frequencies.

While it is not clear what Mr. Goulet's objection is to such antennas, perhaps he is concerned about transmission lines or radio heads. The ability to connect numerous different transmitters to one antenna is quite a trivial matter as either the antennas contain the required electrical components (duplexers, combiners, diplexers) or such devices can be located at the bottom of the pole. In fact the Ericsson antenna noted even contains a remote radio head within the antenna itself (at the PCS/AWS frequencies) and it would be merely the location of the lower band radios at the base of the structure. Once again the use of such technology (although technically possible but not convenient for the carrier) can significantly reduce the visual impact of the facility or allow it to be fully stealth. Should, that as previously noted, not be something your Board may wish to consider, there may always be the consideration of the installation of a faux pine tree pole in what appears to be this pine tree forested location.

FINAL CONCLUSION AND OPINION

The application before your Board is the most confusing, inconsistent, error containing, full of apologies and lack of supportable justification I have ever seen. The C Squared submissions have strayed from the first relatively simple application of AT&T itself with the addition of new

frequencies and signal and coverage depictions that have not been previously utilized or supported. The submissions totally confuse anyone who might need to determine if there is need or justification for the site. Moreover, for the life of me, I cannot figure out why it would take months for C Squared to respond to my relatively simple requests and then dump them on me at the last minute. It may be best to just start over with an application that requests coverage relief for AT&T's legacy frequencies (at supportable signal strength levels) so your Board, this engineer and perhaps a future judge can all make sense out of it.

Finally, one more comment just to set the record straight. Mr. Goulet states in his final Conclusion section: *As Mr. Graiff's report confirms, AT&T has a "dearth of coverage in the area of Paxton, especially the proposed site."* Not to *opine* on this, but the **fact** is that I stated in my second report: *None the less, **this map** does indicate a dearth of coverage in the area of Paxton, especially proposed site.* I made no statement of fact as to whether that was the case or not.

Please accept in advance my apology, because of the short time between when I received the electronic copy of the submission and the need to get this report to you as soon as possible, for any errors in spelling, syntax, run on sentences or improper punctuation. OK, now I've apologized too!

This review and report is based on the information presented and to the best of my knowledge and belief that the information contained therein is true, accurate and complete. Should your Board have any additional questions, please feel free to contact me at any time.

Very truly yours

A handwritten signature in black ink, reading "Ronald E. Graiff". The signature is written in a cursive, flowing style with a large, stylized "G" at the end.

Ronald E. Graiff