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Sabrina D. Charney Hull, AICP
Director of Planning
Town of New Castle
200 South Greeley Avenue
Chappaqua, NY 10514 Via email: SCharneyHull@mynewcastle.org

RE: Review of Homeland Towers, LLC/T-Mobile Northeast LLC / New Cingular Wireless PCS, LLC – Barnes Lane – TM# 91.8-2-2 -- RF Consultant's Report No. 1

Dear Ms. Charney Hull:

At your request, I have reviewed the application material submitted by Homeland Towers, LLC ("Applicant") and the Co-Applicants doing business as AT&T and T-Mobile for the construction and operation of a 180-foot monopole communications tower and associated equipment in the Town of New Castle.

In my opinion, the application, in its current form, is incomplete and does not clearly demonstrate that the proposed facility would comply with all relevant rules and regulations of the authorities having jurisdiction. There may be viable radio frequency (RF) design options with less impact on the community that have not been fully addressed. Additional information and clarification are needed from the Applicant in order for the Planning Board to reach a fully informed decision and to provide a complete and accurate public record. The following specific comments and recommendations are provided for the Board's consideration.

Comment 1: The FCC's so-called Shot Clock Order[1] requires that municipalities promptly notify an applicant if a facility application is deemed incomplete. This will extend the time limit for action by the municipality.

Recommendation 1: If it has not already done so, the Board should notify the Applicant that the current application is incomplete and should specify the additional information required, as noted below and by other reviewers of the application. The notification should cite the code provision,

[1] See https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-153A1.pdf

ordinance, application instruction, or otherwise publicly-stated procedures that require the information to be submitted.

Comment 2: §60-430 O (14) (l) of the Town Code establishes priorities for wireless telecommunications facility siting and §60-430 O (14) (l) (3) requires that "[w]herever possible, such facility shall be attached to an existing building or structure." The Homeland Towers letter dated November 11, 2018 provides an "area analysis of feasibility of alternate existing structure sites or collocation opportunities." The letter acknowledges that the Con Edison transmission line that runs through Millwood is a "...property in the search area that currently has existing antenna facilities," but concludes that "...collocaton at this location is not feasible." This conclusion seems to assume that any new facility would have to be located on the *same*[2] transmission towers as the existing T-Mobile and Sprint antennas rather than on the Con Ed towers approximately 400 feet southeast of the proposed facility. These towers are existing structures and are part of the same transmission line. They are actually somewhat closer to the center of the search area than the proposed site. All other factors being equal, this location may actually be slightly superior to the proposed site from the RF standpoint. There is also an existing water tank on Town property approximately 350 feet east of the proposed facility. The tank may be capable of supporting one or more of the proposed antenna arrays, which could be painted to match the tank. This facility was not addressed in the application. Using either of these locations might reduce the need for the extensive site preparation, paving, drainage and tree removal that would be required for the proposed facility.

Recommendation 2: The Board should ask the applicant to consider using the Con Ed tower(s) and/or the existing water tank for the proposed antennas or to demonstrate why such use is not feasible, including the submission of propagation modeling and other data to support its conclusions.

Comment 3: §60-430 O (14) (l) [2] of the Town Code requires that "[t]o the extent reasonably practicable, wireless communications services facilities shall not be located within 2,500 feet of any historic district or any site with official designation as a local landmark, or which is listed or designated as eligible for listing on the State or the National Registers of Historic Places." The proposed facility is approximately 700 feet east of the Taconic State Parkway which is listed on the National Register of Historic Places. The Taconic State Parkway Scenic Byway Corridor Management Plan specifically calls for avoiding the "...introduction of design elements such as

[2] The FCC definition of collocation includes attaching telecommunications facilities to *any* existing building or structure, not just those already housing telecommunications facilities. See https://www.federalregister.gov/documents/2002/02/05/02-2705/fact

cellular towers..."[3] While it may not be feasible to site the facility more than 2,500 feet from the Parkway and still provide the required coverage, it may be possible to site the facility further away from the Parkway by locating the facility on the Con Ed tower(s) and/or water tank while maintaining, or even improving RF performance.

Recommendation 3: The Board should ask the Applicant to identify, and implement as appropriate, any reasonably feasible alternatives for relocating the facility to a point farther from the Parkway.

Comment 4: §60-430 O (14) (n) of the Town Code establishes a property line minimum setback requirement, in this case equal to the height of the tower,180 feet. The site plans indicate that the proposed tower will be only 60 feet from the nearest property line. This could present a danger to public safety if the tower were to fail and fall full-length in that direction. Although it is a common belief that monopole towers of this type can only fail by collapsing in upon themselves, there are numerous instances of these structures falling full length due to fire or failure of baseplates, flanges, joints and bolts. Between 2003 and 2014, there have been more than 22 documented cases of communications tower structural failures in the US[4]. There have been a number (at least 16) of monopole cell tower fires, some of which have weakened the structure sufficiently to cause full-length collapse[5]. In addition, there have been instances of damage by ice and debris falling from cell towers and tower damage due to criminal activity and attractive nuisance. There are alternative RF design options which could change the height and/or location of the structure in order to comply with the Town Code setback requirement.

Recommendation 4: The Board should ask the applicant to revise the RF design to meet the setback requirements if it is reasonably feasible to do so or to relocate the antennas to the Con Ed towers, (where they would be within the transmission line right-of-way) or to the water tank where they would not substantially increase any preexisting hazards.

Comment 5: §60-430 O (14) (o) of the Town Code limits structure height to the "...minimum height reasonably necessary to accomplish the purpose it is proposed to serve," and imposes a maximum limit of 150 feet. The proposed facility would exceed this limit by 30 feet. The Independent Radio Frequency Report Regarding a proposed Wireless Communications Facility

[3] Taconic State Parkway Scenic Byway Corridor Management Plan Part 4.4 A. p. 139
[4] For example, see http://www.masslive.com/news/index.ssf/2014/03/heavy_wind_and_rain_causes_col.html
[5] See for example http://www.electronicsilentspring.com/primers/cell-towers-cell-phones/cell-tower-fires-collapsing/

prepared by PierCon Solutions (T-Mobile Report) dated November 8, 2018 maintains that the full 180-foot height is needed to provide clearance from trees and terrain and to provide adequate space and vertical separation for two initial and two potential additional wireless providers. The Comprehensive Radio Frequency Report prepared by RF Services (AT&T Report) dated September 7, 2018 makes a similar argument. Both reports provide propagation maps showing coverage with and without the proposed facility and both identify a coverage gap in the vicinity of the proposed facility. Neither report provides maps of coverage at reduced antenna heights or discusses any alternatives for reducing tower height requirements. These could include reducing the vertical separation between antennas or providing horizontal separation by constructing two towers. It is also possible to design a single structure in such a way that it could initially accommodate only the two initial collocators and then be extended to accommodate one or more future collocators only when and if needed. Reducing the height below 150 feet, in addition to complying with this section of the Town Code, might facilitate compliance with setback requirements.

Recommendation 5: The Board should ask the Applicant to provide additional propagation maps showing coverage at reduced antenna centerline heights at increments of 10 feet from the proposed 180-foot height down to a height at or below 150 feet. The Applicant should also discuss the feasibility and potential impact of reduced antenna spacing, horizontal separation and future tower height extensions, if needed.

Comment 6: §60-430 O (14) (e) of the Town Code states an intent to "[m]inimizie adverse visual and aesthetic impacts of wireless telecommunications facilities to the maximum extent practicable through careful design, siting, landscaping, screening and innovative camouflaging techniques. In addition to any recommendations by the Town's environmental reviewers for screening, landscaping and other mitigation options, there are a number of RF facility design alternatives that could be considered. These include "monopines" (artificial trees) "slick sticks" (antennas contained within the tower structure) or flush mounting of antennas have been used in other installations. Even otherwise conventional antennas can be made to visually blend with the surroundings by wrapping them with a reflective, RF transparent product such as 3M™ Conceal Film.[6] Facilities can also be mounted on or inside existing structures. There is one facility along the Taconic State Parkway in the Town of Clinton that is entirely contained within an existing farm silo. All of these alternatives affect cost, RF performance, ease of maintenance and flexibility to meet future requirements and should be weighed against potential environmental benefits as determined by environmental reviewers.

[6] See for example https://news.3m.com/press-release/3mconcealfilm/new-3m-conceal-film-masks-cell-site-infrastructure-aid-site-acquisition

Recommendation 6: The Board should ask the applicant to discuss in detail available innovative techniques and design options to minimize the adverse visual and aesthetic impacts of the facility and to incorporate them into the facility design as feasible and appropriate.

Comment 7: §60-430 O (14) (v) of the Town Code requires that the facility ".... shall be certified to conform with the maximum NIER exposure standards promulgated by the FCC..." The Antenna Site FCC RF Compliance Assessment and Report prepared by Pinnacle Telecom Group dated August 23, 2018 concludes that the proposed facility with both the initial and assumed future collocators would produce, at most, only 1.0202% of the FCC maximum permissible exposure (MPE) for the general population. Based on the height of the tower and experience, including physical field measurements, at similar facilities, it would be extremely unlikely that this facility would exceed MPE limits. The Pinnacle findings, however could not be verified since the report does not specify the antenna types used in the modeling and no samples of the calculations used by their internal software were provided. Also, the report assumed zero antenna downtilt, while several degrees of downtilt is common in facilities of this type, somewhat increasing nearby ground level power density. It is possible that the actual calculated value might be closer to 2 or 3% of MPE, but still a small fraction of MPE.

Recommendation 7: Once the site location and design are finalized, the Board should ask the Applicant to provide an updated NIER report showing all actual and assumed equipment configurations and showing sample calculations sufficient to verify the conclusions prior to final approval.

Comment 8: Sheet CP-1 of the revised site plan shows a 10x10-foot area for "future municipal equipment." No notes or specifications were found to indicate the nature of the future municipal equipment and no provisions were noted for any associated antennas on the tower. The addition of municipal radio systems could potentially affect the radio frequency radiation levels, physical characteristics, noise signature and overall height of the facility.

Recommendation 8: The Town, to the extent known or anticipated, should provide the Applicant with its equipment specifications at the site and should require the Applicant to incorporate any resulting impacts into the appropriate site plans, radio frequency radiation reports and environmental analyses.

Comment 9: The T-Mobile and AT&T installations described in the application are based on 4th Generation, Long Term Evolution (4G LTE) technology with some legacy (3G) capability.

Wireless carriers in the United States are starting to implement 5th Generation (5G) networks, although this technology is not mentioned in the application. It is not clear if or when this capability will be implemented at the subject site or how it might affect the physical and NIER characteristics of the facility. The FCC's 5G Fast Plan seeks to accelerate 5G deployment and states that networks will be largely implemented using "small cell" infrastructure "...as opposed to large cell towers..."[7] with facilities mounted on utility poles and the like.

Recommendation 9: The Board should ask the applicant to comment on the timing of any known or anticipated 5G deployment and how such deployments are likely to affect the proposed facility or the need therefore.

Comment 10: The T-Mobile Report dated November 8, 2018 provides propagation maps showing coverage with and without the proposed facility in two different frequency bands. These maps only show coverage at a threshold level of -97 dBm Reference Signal Received Power (RSRP) which, according to the report, is the minimum required signal level for in-building coverage. The AT&T Report dated September 7, 2018 likewise depicts "before" and "after" coverage at a single threshold level (in this case -85 dBm Received Signal Strength Indication (RSSI) at a single frequency of 1900 MHz), which is apparently AT&T's standard for in-building coverage. Although both reports reference the need the on-street (outdoor) and in-vehicle coverage, including specific roads and highways, neither report depicts outdoor or in-vehicle coverage levels. Thus, the service gaps shown on the maps may or may not represent a gap in outdoor or in-vehicle coverage even though roadways, trails and parks are part of the T-Mobile and AT&T coverage objectives. This single-threshold type of presentation can give an impression of no coverage where coverage actually exits and can make it difficult to evaluate the relative merits of various design alternatives. Also, the AT&T maps may further understate actual coverage by depicting only one frequency band at the higher end of their spectrum. Finally, the two reports use different signal measurements: RSRP and RSSI. This makes meaningful evaluation and comparison of actual coverage potential even more difficult.

Recommendation 10: The Board should ask the Applicant to provide revised coverage maps (at the proposed and reduced antennal centerline heights noted above) showing outdoor, in-vehicle and in-building coverage at frequencies representative of each carrier's most and least "robust" frequencies. The maps should be consistent in terms of signal level criteria, i.e. both carriers should use one measure, either RSRP or RSSI. If this is not feasible, then the Applicant should provide a table, graph or chart denoting equivalent RSRP vs. RSSI values applicable to the

[7] See https://www.fcc.gov/5G

proposed facility so that one carrier's effective coverage and signal strength requirements can be compared with the other.

Depending on the Applicant's response to these comments and those of other reviewers, it is likely that additional review and comments may be required. Meanwhile, please make the appropriate distribution of this report and let me know if there are any questions or if anything further is required at this time.

Sincerely,

Walter A. Cooper