

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

What Is a “small cell”?

“Small cell” is a marketing term, not a technical term. “Small cell” is used by the wireless industry to describe a class of antennas that are designed to be installed at lower heights and designed to operate closer to mobile devices, than so-called “macro cells or macro towers.”

A macro tower is typically 75 to 150 feet tall, antennas may be 6 to 9 feet long, and these macro antennas can provide coverage for about a 1-mile radius. In comparison, a small cell tower is designed to be installed 20 to 35 feet above ground, with an antenna 2 to 4 feet long. (Sometimes, multiple antennas about 1 to 1.5 feet long are installed inside a cannister 2 to 4 feet long.) The small cell mobile device coverage area varies from a radius of 250 ft to 500 ft.

As described above, approximately 57 small cells would fit inside the coverage area of a macro cell – but a single small cell provides as much capacity as a single macro cell. More capacity helps bandwidth-intensive applications – such as mobile video and video streaming – work better. Installing small cells at strategic locations will create more capacity in small-radius areas. Mobile service traffic can be moved seamlessly from congested taller macro antennas to shorter small cells. This is why there is more demand to install small cells in densely populated urban areas, near transit stops with large concentrations of mobile phone users, and along large capacity roads with traffic congestion. For converse reasons, small cells are not likely to be deployed to rural or sparsely populated areas – these areas will be served with taller macro towers and there is no financial incentive to install an antenna in a sparsely populated area that will serve an even smaller-radius area.

Small cells require power, and they typically have a pair of fibers for every wireless carrier served by an antenna, installed from a network connection point to the antenna. The small cell uses less power and emits less radio frequency (RF) emissions than more powerful macro cells. Small cells require equipment nearby, that converts the analog RF wireless signal into a digital IP (Internet protocol) signal that travels as light through fiber. Different wireless providers can share a single antenna, but typically they need separate equipment within a single equipment cabinet. This equipment can be installed on a pole, in the pole base, or at ground level near the pole (sometimes disguised as a trashcan, under a bench, or as public art). This equipment generates heat and must be air-cooled or fan-cooled. Equipment on poles can be smaller because it is air cooled, and equipment at ground level needs a fan and to be reinforced to prevent damage.

However, confusingly, “small cells” are used to describe antennas that provide mobile (i.e., cell phone) coverage, and also as “fixed wireless.” Fixed wireless is using a wireless signal to replace a fiber or coaxial connection from the street to a house. Small cells used for mobile coverage serve about a 250 to 500 feet radius, but small cells used for fixed wireless might serve a distance of one-half mile.

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

What Is “5G”

“5G” or “5th generation” is a marketing term used by the wireless industry to describe the ability to deliver one gigabit per second service capacity to a mobile device.

5G can mean a process in which the antenna is installed closer to the mobile device (i.e., using a “small cell”) to create more capacity. The spectrum (bandwidth wave frequencies) carry and deliver mobile data to the device. After the data is delivered, the spectrum can be reused. By allowing this repeated delivery of data and reuse of spectrum, more capacity is created.

Confusingly, 5G also refers to specific radio frequency bands, that operate at higher frequencies than current 3G or 4G bands. These higher frequency 5G bands have a shorter physical range, i.e., they do not travel as far. These 5G bands need small cell technology to support deployment in densely populated areas.

Finally, even more confusingly, 5G is also used to describe several new technologies that are still being tested and developed. When industry speaks about 5G technologies, you might hear the terms, “millimeter waves,” “small cells,” “massive MIMO,” “full duplex” or “beamforming.” These are all new technologies being tested to reduce delay and increase download speeds. It’s not clear yet which technologies will work best, and it is why there can be a lot of variation between what different wireless companies state they need to deploy “5G”. It is not clear yet how well these 5G technologies and spectrum will work in buildings, in rain, and where there are a lot of trees.

Why Should the County Allow Any Telecommunications Towers in Residential Neighborhoods?

Under federal law, County law may not prohibit provision of a telecommunications service. While there are many ways to receive such services, there are some carriers that only provide telecommunications service wirelessly. The County cannot prohibit one means to get service because there is another alternative means or carrier available. Prohibiting deployment of any antennas in a residential neighborhood may have the unintentional effect of prohibiting the provision of service.

In addition, the County has an interest in ensuring that all residents have access to robust, affordable broadband service. In the past two years, mobile telephone line subscriptions have increased by over 65,000 lines and there are now more than 1 million mobile telephone lines in the County. The future of communications is mobile, and the County wants to remain one of the most digitally connected places in America.

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

What Is the Difference Between “Limited Use” and “Conditional Use” in the Montgomery County Zoning Code?

Limited Use. The zoning code is designed to ensure that uses are compatible with the community. To qualify as a limited use, certain requirements must be met. These requirements establish what is required to be compatible with the community. Typically, no discretion is required to interpret whether these requirements are met – something either complies with the conditions or it does not. Common types of limited use standards are size, color, height and setback distance. The presumption for limited use is that if the requirements are met, the use will be compatible with the community; therefore, no public zoning hearing is required if the pre-established requirements are met.

Conditional Use. Conditional use requires discretion to determine if the use is compatible with the community. An application is filed with the Office of Zoning and Administrative Hearings (OZAH) and is jointly reviewed by OZAH and the Planning Commission. After OZAH determines that an application is complete, OZAH will issue a notice of a public hearing to affected properties. These properties are typically within a one-quarter mile radius, or within sight or sound, of the proposed use. A premise sign will also be attached to the property to notify the public that a conditional use has been requested. A Hearing Examiner will conduct the public hearing, allow testimony, and write up findings to approve or disapprove the conditional use. In some cases, the zoning code identifies a range of conditions that must be met to allow the use. That is, the use would be allowable if it fits within these requirements. Alternatively, the code identifies factors that the Hearing Examiner should consider to determine whether the use is compatible with the community. Finally, Conditional Use can be used if the applicant wants an exception to the Limited Use requirements, such as to request a shorter setback. Each of these instances requires exercise of discretion. Moreover, some uses will always be subject to Conditional Use because the County has determined there are no objective standards that should be used to allow a use without a public hearing. In contrast, a limited use does not require a public hearing, because the County has already determined that if certain requirements are met, the use is compatible, and it is a matter of administrative review to determine that the requirements will be met.

What is the Process for Allowing Telecommunications Towers in Residential Neighborhoods?

TFCG or Tower Committee Application. Any entity that wants to install an antenna or telecommunications tower must submit an application to the Transmission Facility Coordinating Group (TFCG or “Tower Committee”). The Tower Committee will perform an engineering review of the application, to determine compliance with safety and engineering requirements, such as wind safety, electrical code, Federal Communications Commission radio frequency (RF)

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

standards, etc. The Tower Committee staff determines whether the application is complete. (Federal law limits the time for the County to determine whether an application is complete, and the ability of the County to request additional information after an application is determined to be complete.) The Tower Committee staff conducts a site visit to the proposed location, reviews propagation maps to determine coverage or capacity improvements, and reviews proposed design, location and equipment specification to provide engineering analysis. The Tower Committee staff also requests information and provides analysis about the ability to collocate antennas, as alternatives to installing more telecommunications towers. The Tower Committee members conduct their review of staff reports and discussion to determine whether to issue a favorable recommendation in an open meeting, which the public may attend. The Tower Committee is not a public hearing and does not take public testimony.

DPS and OZAH. Telecommunications towers and antennas applications are either applying for deployment as a limited use, or conditional use. When the Tower Committee issues a recommendation for a limited use, the recommendation is submitted to the Department of Permitting Services (DPS) to receive a building or right of way permit. A change was made in DPS procedures in June 2018 because of changes to the zoning code under ZTA 18-02. DPS now conducts a zoning review for telecommunications building and right of way permits (previously, there was no zoning review when telecommunications facilities were placed in rights of way) and reviews the engineering analysis in the Tower Committee recommendation to determine that the construction requested in the DPS permit application is consistent with what was recommended by the Tower Committee (previously, DPS reviewed a one-page notice that a recommendation had been received, but not the complete recommendation; in addition, for use of poles, the Tower Committee issues recommendations applicable to a specific pole rather a recommendation to use a pole at an address – in this way, the pole reviewed by the Tower Committee will be the same pole DPS will issue a right of way permit to use.). If the Tower Committee issues a recommendation for a conditional use, the applicant must file the Tower Committee (TFCG) recommendation with the Office of Zoning and Administrative Hearings (OZAH) and request approval for a conditional use. If a conditional use is granted, the applicant takes the OZAH conditional use approval and the TFCG recommendation to DPS to request a telecommunication building or right of way permit.

How Will Allowing Telecommunications Towers as Replacements of Pre-Existing Streetlights, Utility Poles, and Parking Lot Lights Impact My Neighborhood?

ZTA 18-11 is allowing a replacement of a pre-existing streetlight, utility, or parking lot light pole as a Limited Use in a residential neighborhood if the pre-existing pole is at least 22 feet tall and the pole is at least 30 feet from a dwelling. (Commercial/Retail areas with mixed use tall residential buildings and street level retail, such as downtown Silver Spring or Bethesda, are not

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

classified as residential.) Pre-existing poles shorter than 22 feet require a conditional use permit. Typically, poles taller than 22 feet will be: utility poles with aerial (overhead) utility lines; spun aluminum poles with cantilevered or cobra-head lights that extend out from the pole; bronze poles with square lights on wide streets; and taller green poles in urban downtown areas. Black poles with trapezoid-shaped lights (or colonial lights), silver poles with space ship/concentric circle designs, and some decorative green streetlights with art deco lights – especially in neighborhoods with underground utilities – are typically less than 22 feet tall.

Limited Use Under ZTA 18-11. Under proposed ZTA 18-11, if the pre-existing streetlight, utility, or parking lot light pole in your neighborhood is 22 feet or taller, and the pole being replaced is at least 30 feet from a dwelling, a request to replace this pole to install a telecommunications antenna will be a limited use. The maximum height of the replacement structure will be an additional 6 feet taller than a streetlight in the right of way, and an additional 10 feet for replacement of a utility or parking lot light pole. If necessary, a few additional feet can be added to replacement of a utility pole to ensure compliance with safety codes requiring minimum distances for communications facilities from power lines. Under separate regulations to be proposed by the County Executive, the County will require that a sign be placed on the pre-existing pole to notify surrounding properties of the proposed pole replacement. The sign will contain an email or website address where interested parties can sign up to be notified once the Tower Committee staff determines that an application has sufficient information to proceed. The County Executive intends to provide the public the ability to provide input in writing that will be considered by the Tower Committee in drafting recommendations. Such input may assist the Tower Committee staff in reviewing selection of a specific pole within a limited area. (Because small cell antennas have limited range, there is a limit to how far they can be moved from an optimal location and still be effective.) However, because of federal time limits to review applications, the time window to submit comments will likely be 5 to 10 days after it is determined that an application contains enough information to proceed. The purpose of allowing use of taller poles as a limited use is to encourage applicants to place antennas on taller poles that may not require height increases, often located on wider streets, where the antennas will be more compatible with neighborhoods.

Conditional Use Under ZTA 18-11. Under proposed ZTA 18-11, if the pre-existing streetlight, utility, or parking lot light pole in your neighborhood is less than 22 feet tall, a request to replace this pole to install a telecommunications antenna will be a conditional use. The pole being replaced will have to be at least 30 feet from a dwelling. The maximum height of the replacement structure will be 22 feet tall and it must be set back 30 feet from a dwelling. A public zoning hearing will be scheduled and the neighborhood associations and properties approximately one-quarter mile from the proposed new telecommunications tower will be notified of the hearing and be provided an opportunity to testify. Through separate regulations, the County Executive will also propose that a sign be attached to the pole proposed to be replaced to provide additional notice. A Hearing Examiner will review the TFCG

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

recommendation and Planning Commission recommendation. The Hearing Examiner will review the application, recommendations and testimony to determine whether this is the least visually obtrusive location within 400 feet. The Hearing Examiner also has discretion to require visual screening elements such as screening and color.

The purpose of requiring conditional use for replacement of poles shorter than 22 feet is that these poles will always require a height increase, and are more difficult to make compatible with neighborhoods, especially in areas with underground utilities. However, under federal law, the County cannot prohibit all deployment of antennas in residential neighborhoods. By having a Hearing Examiner review the proposed location, the intent is to encourage the applicants to select locations that are farther from houses, such as across the street where there are no houses, adjacent to a park or greenway, surrounded by trees that make the antenna less visible, or near an intersection with other large street signs. Moreover, the purpose of allowing replacement of poles taller than 22 feet as a limited use is to incentivize applicants to select taller poles wherever possible.

Conditional Use Setback Reductions Under ZTA 18-11. Under very limited circumstances, the Hearing Examiner could allow use of a pre-existing pole closer than 30 feet to a dwelling. These provisions are proposed in ZTA 18-11 to comply with federal law that local government regulations not have the effect of prohibiting service. If there is no other pole within 800 feet that is at least 30 feet from a dwelling, then a pre-existing pole closer than 30 feet could be used. This is only likely to occur in new neighborhoods where houses are built much closer to roads than in the majority of the County. But even in these neighborhoods, there is often a taller pole that is farther from a house. In this instance, if a pre-existing pole that could meet the 30 foot setback exists, approval to reduce the setback is not likely to be granted. The Hearing Examiner can reduce the setback if it allows placement in a less visually obtrusive location. ZTA 18-11 is allowing replacement of a pre-existing streetlight, utility, or parking lot light pole; ZTA 18-11 does not change the current 300 foot setback from a dwelling to install a new pole or new telecommunications tower that is not replacing an pre-existing pole.

Can equipment be required to placed underground?

The equipment requires electrical power and generates heat. It must be cooled and large air vents at ground level would be needed. To avoid potential hazards from snow piling up and melting into the equipment vaults, the County is not requiring equipment to be undergrounded.

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

How Close to Homes Can Antennas Be Placed on Existing Structures?

Since the mid-1990s the County has allowed antennas to be placed on existing structures as a limited use. The purpose of this was to encourage use of existing structures instead of installing new structures. In 2014, the zoning code was amended to allow small antennas to be attached to any existing structure. At the time, there were only 3 such small antennas and all were deployed in commercial areas. Thus, in the 2014 zoning code amendment, small antennas were allowed on any structure at least 60 feet from a dwelling.

In 2018, the characteristics of emerging 5G and small cell technology require that antennas be located closer to mobile devices, and thus closer to residences and businesses. In ZTA 18-02, the County approved allowing the smallest class of antennas to be located on poles at least 10 feet from buildings in commercial areas. In proposed ZTA 18-11, the County Executive recommends that the smallest class of antennas be allowed if at least 30 feet from a dwelling in residential neighborhoods. This makes the setback for replacement of preexisting poles the same as the setback to attach to an existing structure that does not require replacement.

ZTA 18-11 also proposes that the minimum height of building on which an antenna can be installed in a residential area be reduced from 50 feet to 35 feet. This would allow antennas to be attached to more three-story buildings in residential areas. But ZTA 18-11 also recommends that any such building used to attach antennas to, should be at least 10 feet from a detached house, duplex, or townhouse.

Why Should Antennas Be Allowed to Be Placed Closer to Homes If We Are Uncertain About the Health Effects of Having Antennas Closer to People?

Under federal law, local and state governments are prohibited from zoning on the basis of RF emissions. The Federal Communications Commission (FCC) sets limits for RF (radio frequency) emissions and the County reviews every antenna application to enforce the federal RF limits. RF emissions decrease as the distance from an antenna increases and increases the closer a person is to a mobile device. RF varies based on specific antennas, but the RF exposure from standing 9 feet from a 20-foot tall pole with 3 antennas attached, is roughly similar to the RF exposure for a person holding a cell phone. The RF exposure limits vary based on specific equipment and power, but generally under federal standards, an antenna must be at least 2.3 feet away to comply with FCC RF exposure limits. If three antennas are placed on a pole, the FCC RF exposure limit is 10.5 feet. (Note, the zoning code permits antennas to be installed on poles as close as ten feet to a building in a commercial area. But 3 antennas on a single pole would not be permitted to be installed this close to a building because it would not comply with the FCC RF standards enforced by the County.) The County is continuing to lobby Congress and federal agencies to update RF standards.

ZTA 18-11 Telecommunications Towers – Approval Standards Frequently Asked Questions

Why Are There So Many Applications to Install New Antennas in Some Areas and No Antennas Planned for Similar Nearby Neighborhoods?

It is unknown how many new 5G small cell antennas will be installed. Estimates range from 700 to as high as 5,000. And it is unclear which new 5G technologies will best meet the growing demand for more mobile services. Many providers are requesting to install antennas in urban areas where demand is high and where they are projected to require more capacity in the very near future. These antennas are using 5G technology to enable current 4G spectrum to provide more capacity. But some providers are working to deliver more capacity to single family home neighborhoods. We anticipate that 5G small cell antennas will be deployed in limited areas and expand over time to nearby areas.

Why Make Any Changes Now to the Zoning Code If There is Uncertainty About 5G Small Cell Technology?

Given the unprecedented state and federal legislative and regulatory efforts to preempt the authority of local government to manage the placement and size of telecommunications towers in the public rights of way, it is important that we work expeditiously to enact reasonable local solutions to manage small cell deployments.

As many in the community are aware, State preemption legislation was introduced in the last Maryland General Assembly session and we anticipate that it will be reintroduced next session. US Senate legislation has been introduced to restrict and preempt local authority over small cell deployment and to give the FCC more authority to preempt local government authority to manage public rights of way and to require both recovery of permitting costs and compensation for use of public property by commercial service providers. The FCC has issued an Order for consideration at its August 2018 meeting to preempt express and de facto moratoria on deployment of small cells and announced an attempt to further preempt local government authority to regulate communications facilities in the public rights of way. And the FCC's Chairman's hand-picked, industry-tilted, Broadband Deployment Advisory Committee recommended that shot clocks be shortened to prevent public zoning hearings and preempt all local zoning if shot clocks are not met.

The best defense we have against these intrusions into local governance is to demonstrate that no further state or federal preemption is necessary because we have already provided a balanced local solution. Preemption will certainly lead to less local input and an inability to protect residents.