

## White Paper: Buffers

The focus of this white paper is the requirements for buffers as spelled out in the regulations of the Zoning Ordinance (ZO) and the Design and Construction Standards Manual (DCSM). “Buffers” as used here refers to those buffers (landscaped and/or retaining existing trees) typically located at the perimeter of developments between dissimilar uses, along major roadways, etc. – not to Chesapeake Bay Resource Protection Buffers.

The paper introduces the basic concept of why our ZO and DCSM have landscaping requirements, then narrows to the stated intent or purpose of buffers, the function of buffers, and concludes with frequently asked questions.

### **I. Background**

The benefits that trees and landscaping bring to a community have been widely recognized by localities not only in Prince William County but across the commonwealth. Prince William County’s Board of County Supervisors (BOCS) recognized these many benefits when they incorporated landscaping and buffering standards into the County’s code requirements. As is stated in its introduction, the Zoning Ordinance (ZO) exists to:

*“Facilitate the creation of a convenient, attractive, and harmonious community... Encourage economic development activities that provide desirable employment and enlarge the tax base... Protect surface water and ground water...” (ZO 32-200.1)*

The Zoning Ordinance speaks to the benefits of buffers and landscaping in general:

*“The preservation and replacement of trees will aid in stabilizing the environment’s ecological balance by contributing to the processes of air purification, oxygen regeneration, ground water recharge, and stormwater runoff retardation, while at the same time aiding in noise, glare, and heat abatement. Revegetation standards are also appropriate to ensure that the local stock of native trees and vegetation is replenished, as well as creating wildlife habitats. (ZO 32-250.40; See also the Design and Construction Standards Manual, Section 801.01A)*

### **II. Stated Intent/Purpose:**

Buffers were specifically added to the minimum standards for new construction projects because:

*“Certain uses when abutting each other are incompatible and create conflict that may be reduced or eliminated by appropriate measures. Buffer areas established between incompatible uses minimizes these conflicts and the adverse impacts of essentially incompatible development. These provisions are intended to provide a mechanism*

*whereby adjoining properties may be shielded from the adverse consequences of such development.” (ZO 32.250.30; DCSM 802.10A)*

And:

*“Buffers may also be required when properties abut a Highway Corridor Overlay District, with rezonings or special use permits, and where certain zoning designations require perimeter buffers.” (DCSM 802.10)*

With regard to landscaping in general, the ZO states,

*“The purpose of these provisions is to preserve and protect the unique identity and environment of the County by preserving and replacing trees to preserve the economic base attracted to the County, by enhancing property values, and by raising the quality of life.” (ZO 32-250.40)*

### **III. The Function of Buffers (i.e., how the design of buffers achieves their purpose)**

Buffers are composed of two basic components that enable them to achieve their expressed purposes: 1) a specified width of land and 2) trees and shrubs. The Zoning Ordinance states with regard to width, “The minimum buffer width is generally a uniform dimension across the entire length of the common property line.” (ZO 32-250.31.1). In regard to content, “Buffer areas shall preserve existing vegetation, as appropriate, or shall be landscaped...” (ZO 32-250.32.1)

Within the concept of the buffer is the idea that trees and shrubs constitute a desirable and valuable living part of our landscape that has the ability to grow and mature over long periods of time, and that becomes more valuable monetarily, environmentally and aesthetically as the trees and shrubs mature.

The following list identifies the benefits of buffers and how they function to achieve those purposes.

Preserve and protect the County’s Identity and Environment: Ecologically Prince William County lies within the Eastern Deciduous Forest, meaning that the dominant ecotype that the land naturally forms is forest composed primarily of hardwood trees such as oaks and hickories. Our land and waters are healthiest when good quality forest cover dominates the land. Forests create not only healthy land, but healthy streams, tidal zones and estuaries. Landscaping requirements, particularly the buffering and tree cover requirements encourage the preservation of existing forest cover. Most County buffer regulations require planting species native to Virginia, encouraging the replacement of some plant types lost during development.

Enhancing property values: Buffers protect property values by providing physical separation and trees and shrubs between incompatible land uses. The more incompatible the abutting uses are, the larger the width of the buffer and the more landscaping it contains. The types of plants credited toward buffers is flexible so that views through buffers may be opaque to visually block undesirable adjacent features such as loading areas or parking lots, or see-through where more visibility is desired. Buffers may be designed to retain existing mature trees that add value to a given property. The presence of larger trees in yards and in streetscapes can add from 3% to 15% to home values.<sup>1</sup> Homes adjacent to naturalistic open spaces are valued 8-20% higher than comparable properties<sup>2,3</sup>. Commercial properties have

benefited from 7% higher rental rates when they have high quality landscapes<sup>4</sup>. One study showed that, 83% of realtors believe mature trees have a ‘strong or moderate impact’ on the salability of homes listed for under \$150,000. On homes priced over \$250,000, this perception increases to 98%.

Raising the quality of life: Studies repeatedly show that even the ability to merely view trees raises the quality of people’s lives and their ability to carry out their daily lives. For students, having views of green spaces relieves stress, leads to higher test scores, and enables quicker recovery of attentiveness after times of focused attention<sup>5</sup>. Office workers take fewer sick days.<sup>6</sup> People spend more time outdoors in their neighborhoods when well-maintained green spaces including trees are nearby.<sup>7</sup> In general, “Natural environments turn out to be particularly rich in the characteristics necessary for restorative experiences.”<sup>8</sup> Urban trees in Virginia are estimated to remove 21,400 tons of air pollutants per year. Their greatest effect in urban areas was in removal of ozone (O<sub>3</sub>) and particulate matter.<sup>9</sup>

Preserving the economic base attracted to the community: The ability of buffers to positively affect property values, as cited above, is part of preserving and advancing the economic base attracted to Prince William County. A well maintained Highway Corridor Overlay District buffer, adds to the appeal of commercial sites by communicating a safe environment with attentive owners. It can also encourage customers to spend more time in the well-landscaped destination.<sup>10</sup>

#### **IV. Frequently Asked Questions:**

##### **1. Buffers in General**

1. Q. When are buffers required?

A. Buffers are required under the following conditions:

- a. Between dissimilar uses (*ZO 32-250.32; DCSM 802.10-.12, Table 8-1*). See FAQs under “B”, below;
- b. Where certain residential units back or side to major roadways (*DCSM 802.48*). See FAQs under “C”, below;
- c. Within the Highway Corridor Overlay Districts created after February 20, 1996 (*ZO 32-503.12, DCSM 1000*). See FAQs under “D”, below;
- d. At the perimeter of certain zoning districts. See FAQs under “E”, below;
- e. At the base of monopoles and towers to include their associated facilities and buildings (*ZO 32-240.10.7*);
- f. Around the perimeters of cemeteries (*ZO 32-250.110.4*);
- g. As a result of conditions proffered during rezonings and special use permits.

2. Q. Is tree preservation required within buffers?
  - A. Generally, no. However, within some of the Planned Districts and Cluster zones, preservation of existing vegetation within the buffer is required. (*See Rural Cluster, ZO 32-300.41.8; Planned Business District, 32-404.04.5*)
  
3. Q. What is the difference between a “Landscape Strip” and a “Buffer”?
  - A. The term “Landscape Strip” is used in DCSM Sec. 800 to refer to a variety of required planting areas associated with non-residential developments. In general, landscape strips do not need to be shown on a recorded plat. Buffers do. Landscape strips do not have Zoning Ordinance restrictions on utility easements, structures, etc. Buffers do. Landscape strips are narrow (only 10’ in width). Most buffers range between 15’ and 50’ in width, with some as wide as 100’. The narrow width of Landscape Strips cannot support the preservation of mature trees. Buffers 30’ in width or more can.
  
4. Q. What is the difference between a “setback” and a “buffer”?
  - A. A setback is a minimum distance by which any building or structure must be separated from a lot line or other feature. There is no prohibition against utilities. A Buffer has a specified width that must contain landscaping and/or preserve existing vegetation and is prohibited from containing structures and other features of the development such as utilities.
  
5. Q. What are the advantages of/incentives for preserving trees in a buffer?
  - A. Preserved trees make it easier to achieve tree cover requirements, there are costs saved by reduced clearing and grading, higher housing prices are often achieved as are quicker home sales, stormwater credits may be taken reducing the size and need for swm facilities.

**2. Buffers Between Dissimilar Uses:**

1. Q. Where will I find the basic requirements for buffers between dissimilar uses?
  - A. *ZO 32-250.30-.32* establishes the intent, policy and core standards and restrictions. *DCSM 802.10 - 802.13* repeats and builds upon the ZO by setting minimum buffer widths, planting requirements, detailing allowable variations and restrictions.
  
2. Q. What is the required content?
  - A. Buffers shall preserve existing vegetation or shall be landscaped. (*ZO 32-250.32(1)*). There is no code requirement that buffers preserve existing vegetation. However, the code encourages retaining good quality forest or re-establishing vegetation similar to what one would find in a native, forested condition. When landscaped, required plantings must include trees and shrubs (*DCSM 802.12.A*). The use of ornamental grasses and perennials is optional and encouraged.

3. Q. Is tree preservation in the buffer required?  
A. No. (*ZO 32-250.32(1)*) But it is preferred (*DCSM 802.10.B*)
4. Q. How does the code encourage preservation or what are the incentives /advantages to preserving trees in a buffer?  
A. When existing trees are preserved, often the tree cover credits from the preserved area are higher than if the same area was cleared and then re-planted; preserved trees are credited toward the planting requirement, lowering the overall cost of site landscaping; typically builders sell homes/lots abutting preserved buffers at premiums; resale property values are comparatively higher; native soils are preserved, stormwater management requirements are reduced; habitat for native wildlife is retained and may be enjoyed nearby; etc.
5. Q. What are buffer widths based on?  
A. The width of a given buffers is based on the abutting use, not the zoning. (*ZO 32-250.30*)
6. Q. What are the standard buffer widths?  
A. For dissimilar uses, buffer widths are set at 15' (Type A), 30' (Type B), and 50' (Type C). The width for a Type D buffer is determined on a "case by case" basis with a minimum width of 15'. The specific width of buffer required for a given use is listed in *DCSM Sec. 800, Table 8-1*. (See also *Table 8-2*).
7. Q. Are buffers required on both of the abutting dis-similar uses?  
A. Yes. However, typically the buffer on the adjacent (non-developing) property is not provided until it becomes a developing property.
8. Q. Are buffers required to be platted?  
A. Yes. They must have a deed restriction noted on a plat or be otherwise recorded among the land records (*ZO 32-250.31.3*).
9. Q. Is a fence allowed?  
A. Yes. *DCSM 802.12.D* allows a 6' tall opaque fence or wall within the buffer.
10. Q. Are utilities allowed to run within buffers?  
A. No, except for "minimal easement crossings" (*ZO 32-250.32.2*).
11. Q. Is a retaining wall allowed within a buffer?  
A. Generally, no. However, if it is less than 3' in height, or if it serves to retain the existing vegetation within the buffer, it may be allowed (*ZO 32-250.32.3*).
12. Q. What other features are restricted?

A. Buildings, structures, active recreation facilities, parking areas, loading areas, sidewalks, trails, and golf cart paths shall not be located in buffers between dissimilar uses (ZO 32-250.32.3). See the ZO definition of “structure” for more insight into what is restricted.

**13. Q.** Can the prohibition against utilities, structures, sidewalks, etc. be waived?

A. As a rule, no. Because these restrictions are in the ZO they cannot be waived. However, the BOCS has the authority to waive or modify the requirements of the ZO during a rezoning or Special Use Permit case. Under these specific circumstances the restriction on utilities, structures, etc. in a buffer could be waived or modified.

**14. Q.** Why are utilities, trails, sidewalks, retaining walls, etc., restricted in buffers?

A. There are several reasons.

- a. The primary intent of the buffer is to separate uses both visually and spatially. If these ancillary elements were allowed in the buffer the separation would no longer be achieved because the development features associated with the use would be in the buffer.
- b. The inclusion of these features and structures typically prevents the preservation of trees.
- c. The inclusion of these features typically prevents meeting the landscaping requirement.
- d. Utility easement holders reserve the right to remove any/all vegetation that they deem interferes with their utility. This precludes any assurance that landscaping or existing trees within a buffer will remain and will be able to grow to maturity to the benefit of adjacent property owners.
- e. Structures such as trails, parking areas, active recreation facilities preclude planting by their very nature.

**15. Q.** Can buffers between dis-similar uses be waived or modified?

A. Yes. The width and content of buffers can be waived entirely or modified because these provisions reside in the DCSM. Waivers and modifications require review and approval by County staff. These requests are typically processed during site plan review.

**16. Q.** Can the width of the buffer be reduced without a waiver?

A. Yes. There are two (2) provisions for this in the DCSM.

First, the width of a buffer may vary by up to 20% of the required width along a given property line if,

- i) The area (sf) of the buffer along that property line is not reduced and if,
- ii) The adjacent property has provided the full width of the buffer required on their side of the property line (*DCSM 802.11.C*).

Second, when one or more land bays with dissimilar uses are part of a mixed use development and are included on a single preliminary plan, then a reduction to the next lower buffer width may be allowed on one of the land bays provided that the buffer is not reduced to less than a Type A buffer (15' wide) (*DCSM 802.11.E*).

- 17. Q.** Can a buffer be located on an individual residential lot?
- A. Generally, no, not since 2006. Buffers must be located in common area, with the exception that if a residential subdivision will not have a homeowner's association (HOA), then the buffer may be located within residential lots with a deed restriction as long as the minimum yard depth and lot size are provided outside the buffer (*ZO 32-250.31.4, DCSM 802.10.E*)
- 18. Q.** Can a buffer be located on the abutting parcel?
- A. Yes, but only if both land owners and the Planning Director are agreeable, if the abutting land owner understands that any buffer required on their land will still be required and if an agreement to these effects is executed and recorded among the land records (*DCSM 802.11.D*).

**3. Buffers for Residences that Back or Side to Major Roadways (*DCSM 802.48*):**

- 1. Q.** When are these buffers required?
- A. When any single-family attached or detached dwelling has a rear or side yard that is oriented toward a roadway classified as a major collector or higher. The buffer is required between the residential lot and the right-of-way.
- 2. Q.** Can this residential roadway buffer be waived or modified?
- A. Yes. The width and content of buffers can be waived entirely or modified because these provisions reside in the DCSM. Waivers and modifications require review and approval by County staff. These requests are typically processed during site plan review.
- 19. Q.** Can the width of the buffer be reduced without a waiver?
- A. Yes. There are 2 provisions for this in the DCSM.

First, a 20% reduction in the width of the buffer is allowed when the line of sight from the traveling lane is at least ten (10) feet above the rear yard elevation.

Second, when a fence, wall or berm is employed that is effective in interrupting the view of the rear yard the required plant units may be reduced by up to 30%.

**4. Highway Corridor Overlay District Buffers (HCOD) (ZO 32-503 et seq.; DCSM 1000):**

**1. Q.** What is an HCOD?

**A.** It is an overlay district established to "... mitigate adverse impacts resulting from development along major thoroughfares in Prince William County." This district follows specific major thoroughfares throughout the County, and is intended to prevent or reduce traffic congestion and control visual clutter. Although not all roads in the following categories are within an HCOD district, the roads that are in HCOD districts include Urban Arterial, Suburban Arterial, Rural Arterial, Urban Parkway and Suburban Parkway and Rural Parkway roadways.

**2. Q.** Do all HCOD districts require buffers?

**A.** No. The older HCOD districts, those established prior to February 20, 1996, do not have a requirement for buffers. However, those created after February 20, 1996 are subject to the HCOD buffering requirements specified in DCSM 1000.

**3. Q.** What is an HCOD Buffer?

**A.** Similar to dissimilar use buffers, an HCOD buffer is a strip of land of a specified width that runs parallel to a designated right-of-way and contains either landscaping or preserved trees, or a combination of the two.

**4. Q.** What are the minimum widths of and planting requirement of HCOD buffers?

**A.** The widths are based on the size of the road (or the road category) and may be either 20', 25' or 50' in width. The planting requirement is graduated in accordance with the buffer width and can be found in Table 10-2.

**5. Q.** Are all the things prohibited in a dissimilar use buffers prohibited in an HCOD Buffer?

**A.** No. DCSM 1003.01.C does allow some development features that are not allowed in dissimilar use buffers. For example, in parkway buffers utility easements may be allowed to run along the edge of the buffer if they serve to extend the utility to adjacent properties. Trails and stormwater facilities may be located within the HCOD buffer if they are an integral part of a landscape plan. Signs can also be allowed.

**6. Q.** Is there provision to reduce the width of an HCOD buffer without needing a waiver/modification?

**A.** Yes. There are two provisions for this.

First, DCSM 1003.01.E allows the buffer to vary by up to 40% from the minimum width as long as the buffer area required is met and various conditions are met that are intended to lessen screening of desirable development features (ex., entrances) and increase screening of less desirable features (ex., loading areas, dumpsters, utilities, mechanical equipment, etc.)



Second, there is an allowance for Alternative Compliance for parcels that meet the unusual site conditions specified in DCSM 1003.03.A.

7. Q. Can an HCOD buffer be located on an individual residential lot?  
A. Yes. The preference is for the buffer to be in common area, however, 1003.01.A -.B allows for the buffer to be located within residential lots with a deed restriction as long as the minimum yard depth is provided outside the buffer (*DCSM 802.10.E*)

**5. Buffers Required by the Zoning Ordinance for Specific Uses or Zoning Districts:**

1. Q. What zoning districts have specific buffering requirements spelled out in the Zoning Ordinance?  
A. PBD (Planned Business District) and the PMD (Planned Mixed-use District). Both the PBD and PMD require a minimum 50' wide (Type C) perimeter buffer. One of the primary goals of this buffer is to preserve existing mature trees, particularly along street frontages. (ZO 32-404.04 and 32-405.04.4)

Rural Cluster. A 100' wide buffer is required between any external street and the edge of the cluster development. It is intended to preserve existing good quality vegetation or must be landscaped if there is none. (ZO 32-300.41.8)

Suburban Cluster. A 50' wide perimeter landscaped buffer is required. Preservation of existing vegetation within the buffer is not required. (ZO 32-300.61.5)

2. Q. Does the Zoning Ordinance call out other specific uses or features that require a buffer?  
A. Yes.  
a. Railroads. A 100' wide buffer is required between a railroad right-of-way and an adjoining property if the property is zoned, used or planned for residential or agricultural uses. (ZO 32-250.31.8)  
b. Golf Courses. A 50' wide buffer is required between a golf course and any adjoining property zoned, used or planned for residential or agricultural uses. (ZO 32-250.31.7)  
c. Monopoles. The bases of monopoles and any anchors, accessory facility or building is to be screened from public streets and adjoining properties with a minimum 15' wide buffer. This provision can be waived or modified by the Planning Director. Such a modification is not uncommon for telecommunication facilities located within power line rights-of way. (ZO 32-240.10.7)

**6. Miscellaneous aspects of buffers:**

1. Q. What are "plant units", why are they used and how do they work?  
A. A plant unit (pu) is based on the number "1". The larger the plant the more plant units are credited. E.g., a large tree like an oak gets 10 plant unit credits, while a small tree like a

flowering dogwood gets 5 plant units, a shrub 2, an ornamental grass 1, etc. Plant units are a means of requiring a density of plants without dictating which plants must be used. Their use gives developers and builders the flexibility to design a landscape to their preferences while still meeting minimum standards. For example, a 30' wide buffer requires a minimum of 180 pu for every 100 linear feet of the buffer. The landscape's designer can pick from a great variety of trees, shrubs, ornamental grasses and perennials to fulfill that 180pu requirement.

2. Q. Are buffers credited toward open space?  
A. Yes. All buffers may be credited toward meeting open space requirements.
  
3. Q. Why were credits for perennials and ornamental grasses added in 2012?  
A. Representatives from the development industry expressed interest in receiving credit for plant types they were sometimes using in buffers and landscape areas, but for which they were not receiving credit. Staff and private landscape architects and commercial developers did an extensive review of existing landscapes to determine what appropriate credits should be given. Due to the fact that many grasses and perennials are only impactful in the landscape during the growing season, the number of plant units required were increased, so that landscape areas and buffers would not look sparse when significant numbers of grasses and perennials were used.
  
4. Q. Why are only native plants allowed in buffers between dissimilar uses?  
A. Because of the loss of native forests during development and because buffering requirements create open space that cannot be disturbed, dissimilar use buffers became logical places to focus on bringing native trees, shrubs and even herbaceous natives back into our landscapes.

#### REFERENCES:

- <sup>1</sup> Wolf, K.L. 2007 (August). City Trees and Property Values. *Arborist News* 16, 4:34-36.
  
- <sup>2</sup> Tyrväinen, L., and A. Miettinen. 2000. Property Prices and Urban Forest Amenities. *Journal of Environmental Economics and Management* 39:205-223.
  
- <sup>3</sup> More, T.A., T.H. Stevens, and P.G. Allen. 1988. Valuation of Urban Parks. *Landscape and Urban Planning* 15:139-152.
  
- <sup>4</sup> Laverne, R.J., and K. Winson-Geideman. 2003. The Influence of Trees and Landscaping on Rental Rates at Office Buildings. *Journal of Arboriculture* 29, 5:281-290.
  
- <sup>5</sup> Dongying Li, W.C. Sullivan. 2016. *Landscape and Urban Planning*, 148:149–158.

<sup>6</sup> Kaplan, Rachel. 1993. *Landscape and Urban Planning*, 26:193-201.

<sup>7</sup> Frances E. Kuo. 2003. The Role of Arboriculture in a healthy Social Ecology. *Journal of Arboriculture* 29(3): 148-155.

<sup>8</sup> Kaplan, Stephen. 1995. The Restorative Benefits of Nature: Toward an Integrative Framework. *Journal of Environmental Psychology*; 15:169-182.

<sup>9</sup> Nowak, D.J. 2014. Tree and Forest Effects on Air Quality and Human Health in the United States. *Environmental Pollution* 193(2014)119-129.

<sup>10</sup> Wolf, K.L. 2008. Community Context and Strip Mall Retail: Public Response to the Roadside Landscape. Paper 08-0842. Proceedings of the 87<sup>th</sup> Annual Meeting of the Transportation Research Board