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MEMORANDUM

TO: Chatham County Board of Commissioners

FROM: Kelly Cousino, White & Smith
Sean Scoopmire, White & Smith
Geoff Green, Clarion Associates

CC: Jason Sullivan, Chatham County Planning Director
Chance Mullis, Chatham County Assistant Planning Director

DATE: July 3, 2024

RE: Additional Information & Input on Draft UDO Module 2

During our presentation of Module 2 of the draft Unified Development Ordinance (UDO) in May 2024, the Board of Commissioners (BOC) provided input on revisions to the draft and identified several areas where more information is needed in order to identify a preferred approach.

The Planning Board reviewed and provided input on draft Module 2 in May 2024. Community members also provided input on the drafts, primarily related to the proposed tree protection regulations in Chapter 6: *Conservation & Open Space*.

Following the meetings, the consultant team reviewed in detail all input received. While some of the suggested revisions are minor, others would be a significant change from the drafts reviewed in May. As such, we are seeking confirmation from the BOC on whether and how to make some of the revisions.

This memorandum is presented in two parts. The first part provides additional information requested by the BOC on certain topics, such as signs and parking. Two of these topics (streetlighting and open space) include alternatives for the BOC's consideration. The second part identifies specific issues or questions on which the consultant team and staff request direction from the BOC.

ADDITIONAL INFORMATION REQUESTED BY THE BOC

Streetlighting

The draft UDO does not propose to require streetlights. However, where a developer chooses to provide them, streetlights must be fully-shielded and have a correlated color temperature of 4,000 Kelvin (4000K) or lower. [See Chapter 4, Subsection 4.5.14: *Street Lighting*]

The Commissioners discussed the impact of streetlights on the community and its predominantly rural character and weighed the pros and cons of prohibiting streetlights altogether. The Commissioners discussed potentially tying a streetlighting prohibition to lot size (e.g., the UDO would prohibit streetlights in subdivisions with large lots, perhaps 5 acres or more).

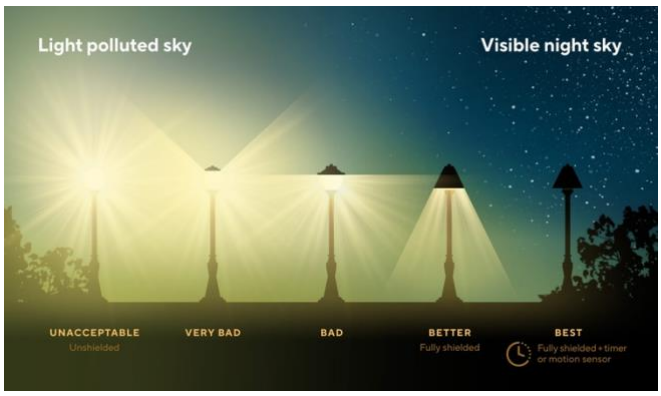

Image source: DarkSky.org

While there was no consensus on this topic, the Commissioners did indicate a general consensus on prohibiting streetlights along the exterior boundary of subdivisions to prevent light trespass into adjacent rural areas. They also requested the consultant team provide options for consideration.

The Commissioners asked whether any communities prohibit streetlights. Based on our experience and research, outright prohibition of streetlights is uncommon. The only examples we found were very small communities in California (e.g., Elfin Forest, pop. 595; no streetlights, lighted signs, or traffic signals).

The Commissioners asked whether there is data on safety and lack of streetlighting in neighborhoods. According to our research, there is not an abundance of data. Much of it focuses on *perception* of safety rather than the actual effect of street lighting on crime. Studies of the effects on streetlighting on the incidence of crime typically examine more urban areas, which tend to have higher instances of crime in general than rural areas.

The data is mixed on whether streetlighting improves vehicular and traffic safety.[1] [2] One study indicates poor lighting uniformity reduces vehicular safety while high lighting uniformity

[1] Preston, H. and Schoenecker, T. (1999), Safety Impacts of Street Lighting at Isolated Rural Intersections. Minnesota Department of Transportation, 1999-17. https://trid.trb.org/View/488330
[2] Crabb, G.I. and Crinson, L. (2008), The Impact of Street Lighting on Night-Time Road Casualties. Transport Research Laboratory, https://saferroadsconference.com/wp-content/uploads/2016/05/Geoff-Crabb-The-Impact-of-Street-Lighting.pdf

improves vehicular safety.[3] This demonstrates it is not simply the presence of streetlights that improves safety, but the quality of lighting the streetlights provide.

However, most of the data we reviewed appears to indicate streetlights contribute to improved safety, both with respect to crime and vehicular and pedestrian safety.[4] [5] [6] [7]

Alternatives for Consideration

We recommend the UDO regulate, but not require or altogether prohibit, streetlights. In addition to requiring that streetlights are fully-shielded and on the warm end of the color spectrum, the UDO could:

(1) Limit or prohibit streetlights along a development perimeter, perhaps with an exception for vehicular access points into the development;

(2) Prohibit streetlights in residential subdivisions where the minimum lot area is X acres;

(3) Require the use of LEDs, which tend to provide better lighting uniformity than other luminaires such as HPS; and/or

(4) Regulate streetlights that landowners rent from the power company for use on individual lots.

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[3] Yang, R., Wang, Z., Lin, P. S., Li, X., Chen, Y., Hsu, P. P., & Henry, A. (2019). Safety Effects of Street Lighting on Roadway Segments: Development of a Crash Modification Function. Traffic Injury Prevention, *20*(3), 296–302. https://doi.org/10.1080/15389588.2019.1573317

[4] Farrington, D. P., & Welsh, B. C. (2002). Improved street lighting and crime prevention. *Justice Quarterly*, *19*(2), 313–342. https://doi.org/10.1080/07418820200095261

[5] Mitre-Becerril, D., Tahamont, S., Lerner, J., and Chalfin, A. (2022). Can Deterrence Persist? Long-Term Evidence from a Randomized Experiment in Street Lighting. Criminology & Public Policy, 21, 865–891. https://doi.org/10.1111/1745-9133.12599

[6] Painter, K. and Farrington, D.P. (1999), Street Lighting and Crime: Diffusion of Benefits in the Stoke-on-Trent Project. Crime Prevention Studies, 10: 77-122. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=9dbf434700a756b5303ed8001ec610011a3904c8

[7] Welsh, B. C., Farrington, D. P., & Douglas, S. (2022). The impact and policy relevance of street lighting for crime prevention: A Systematic review based on a half-century of evaluation research. *Criminology & Public Policy*, 21, 739–765. https://doi.org/10.1111/1745-9133.12585

Open Space

The draft UDO proposes a new framework for open space and requires a certain percentage of open space for all new major residential subdivisions, apartment complexes, and mixed use developments, as well as for the compact conditional zoning districts (CD-CR, CD-CMU, and CD-CN). [See Chapter 6, Section 6.1: *Open Space*]

The Commissioners discussed allowing open space requirements to be met off-site. For example: The proposed development site has a high land cost, so the developer purchases a second, less expensive site and uses it to meet the open space requirements. In this scenario, the developer may be able to provide more open space on the second site than is possible on the proposed development site. However, it would mean the proposed development has little or no open space on-site, other than required buffers and tree save areas. That could be remedied by only allowing the developer to provide a certain percentage of the required open space off-site. The Commissioners compared this to the "density averaging" provisions in the watershed protection regulations.

The Commissioners suggested that any land used as an alternate open space site would have to be part of the County's conservation plan and would have to go through an approval process with the BOC.

The Commissioners requested that the consultant team provide guidance on potential options. We believe the off-site open space approach is a feasible option.

Alternatives for Consideration

(1) Allow developers to provide 100% of required open space off-site.

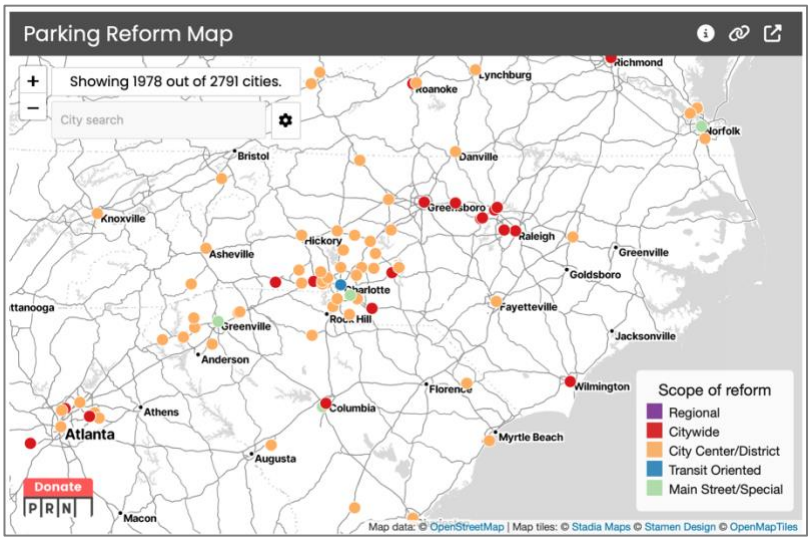
(2) Allow developers to provide less than 100% of required open space off-site. If this is the preferred approach, what is the appropriate percentage—75%, 50%, less?

(3) Require developers to provide 100% of required open space on-site (this is how Section 6.1: *Open Space* is currently drafted).

(4) Part of the purpose for the open space regulations is to provide recreational opportunities for residents and occupants of the proposed development. For this reason, we recommend the off-site open space areas are located within a certain distance of the proposed development (e.g., one mile) and are accessible via a sidewalk or trail system. If a developer may provide any portion of required open space off-site, what conditions or criteria should apply?

Parking

The draft UDO proposes to eliminate minimum off-street parking requirements for most non-residential uses. [See Chapter 4, Subsection 4.6.4: *Parking Ratios*] Many communities across the state and the nation have completely or substantially eliminated minimum parking requirements, instead relying on the marketplace to provide adequate parking to support the uses and tenants on the site.[8]



One of the key concerns about eliminating minimum parking requirements is that parking will "spill over" into neighborhoods, but there should not be a significant impact in the County given that commercial land uses are not connected to existing residential uses with sidewalks or other pedestrian amenities. However, we did receive comments about parking concerns regarding two types of uses. The first is residential uses, particularly, concerns about the lack of visitor parking due, in many cases, to narrow streets which cannot accommodate vehicular parking and access by emergency vehicles. The second are day care uses, and this draft does include minimum parking requirements for day cares, as well as accommodations uses.

The Commissioners discussed the potential effects of this proposal in Chatham County. The Commissioners generally support planning for transit and felt this change to minimum parking requirements indirectly supports transit use. However, the Commissioners also expressed concern that developers would provide too little parking and asked for data on the effect of reduction or elimination of parking minimums on the provision of parking.

We were unable to find evidence in the literature or any other reports that elimination of parking minimums has resulted in new developments that provide inadequate parking. We found some studies that try to address the impacts qualitatively, looking at the supply of parking provided by development projects before and after the elimination of minimum parking requirements and discussions with planners about the impacts of eliminating minimum parking requirements, but nothing we've found gets into whether "enough" parking is required.

There are a few cases where communities have reinstated minimum parking requirements after eliminating them. Miami, Florida, exempted some downtown developments from parking

[8] See Parking Reform Map, https://parkingreform.org/resources/mandates-map/

requirements in 2015 and reimposed them in 2022 due to traffic congestion issues, but that is a very different development context from Chatham County.[9]

The most important takeaway is that developers continue to build parking even if requirements are removed. A comprehensive study evaluating the impact of Buffalo, New York's elimination of minimum off-street parking noted reductions in parking provided in some developments (particularly mixed-use developments), but others provided more parking.[10]

Signs

Design standards for signs are very common for downtown areas and commercial corridors but are not common for subdivision entry signs and signs in rural areas. Generally, design standards for signs address the following characteristics:

- Form
- Placement Location (on Building)
- Materials
- Colors
- Character Size
- Lighting
- Setback
- Other features

Without any design standards, developers are free to define the character of the community identity for the subdivision. Design standards provide more uniformity among the subdivisions in a jurisdiction but restrict the options for a developer to define the character of the subdivision.

Current Conditions for Subdivision Signs in Chatham County

Subdivision signs in Chatham County are generally tasteful and generally reflect the overall branding and style of the subdivision. Signs are generally monument signs (see Figures 2, 3, and 4) but also include post signs (see Figure 1). Signs are both stand-alone (see Figure 2) and integrated with other features such as fences and columns (see Figures 1, 3, and 4). The signs appear to be exclusively made of natural materials, such as wood, brick, stone, and metal. These signs generally have muted colors such as brown, green, and beige (see Figures 2, 3, and 4) but may also have more distinctive contrast (see Figure 1). It appears that indirect lighting is most common for subdivision entry signs. The signs are almost exclusively located in a landscaped area and are set back a reasonable distance from the edge of pavement.

[9] Grabar, H. (2022). How Miami Decided Parking is More Important Than Housing, Slate.com: https://slate.com/business/2022/05/miami-parking-developers-housing.html
[10] Hess, D. B. and Rehler, J. (2021). Minus Minimums, Journal of the American Planning Association, 87:3,396-408, DOI: 10.1080/01944363.2020.1864225

Current Conditions for Subdivision Sign Precedents

Figure 1. Fearington Village Subdivision

Figure 2. Bonterra Subdivision

Figure 3. Chapel Ridge Subdivision

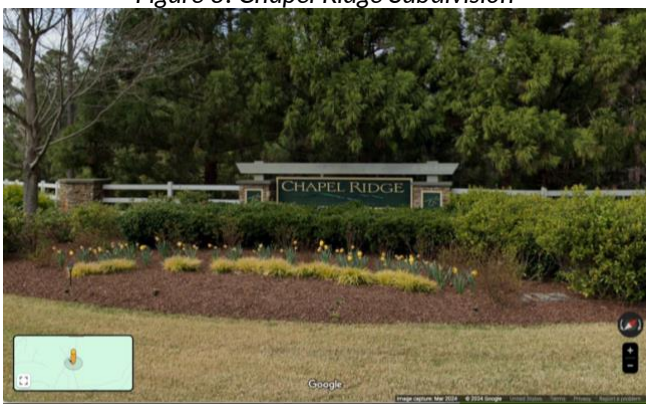


Figure 4. Westfall Subdivision

Precedents from Other Communities

Other communities provide examples of different sign types and creative options. For example, Mill Creek Subdivision in Magnolia, TX, has a sign incorporated into a stone structure with a non-functioning paddle wheel that resembles a mill (Figure 5). Meyer Ranch in New Braunfels, TX, includes a moving windmill in its entry sign (Figure 6). Sun City Carolina Lakes in Lancaster County, SC, features a sign integrated into a landscaped area and waterfall (Figure 7). Seminole Point Subdivision in Fair Play, SC, has a very simple wooden post sign (Figure 8).

Examples of Subdivision Sign Precedents

Figure 5. Mill Creek Subdivision in Magnolia TX

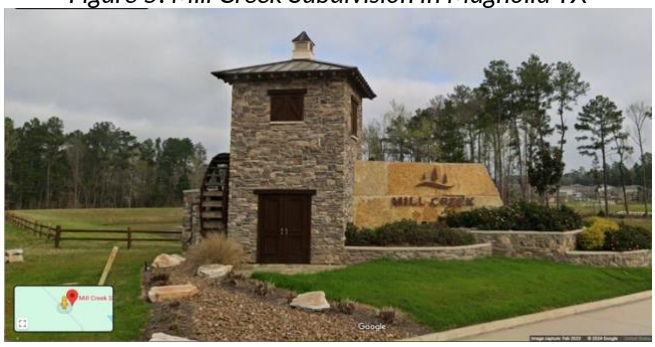
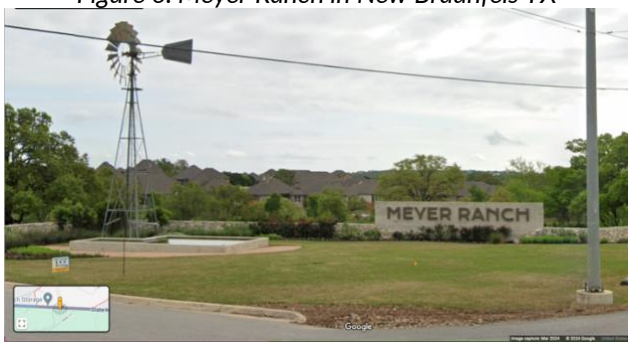


Figure 6. Meyer Ranch in New Braunfels TX



Examples of Subdivision Sign Precedents

Figure 7. Sun City Carolina Lakes in Lancaster County SC

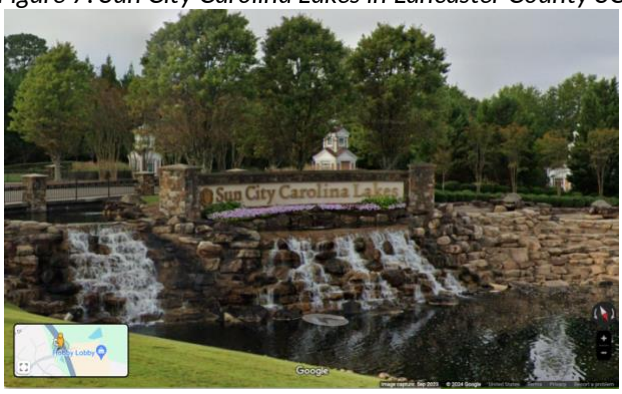
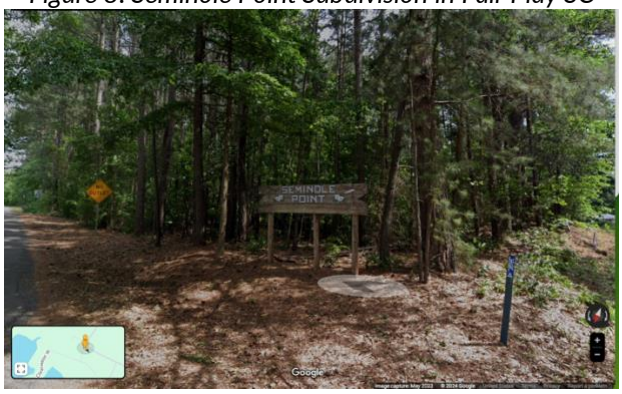


Figure 8. Seminole Point Subdivision in Fair Play SC



Concepts for Design Standards for Subdivision Signs

Design standards can take two forms: proscriptive and restrictive. In the proscriptive approach, the ordinance requires that signs are made of certain materials or include certain features. For example: signs must be made of wood. The restrictive approach prohibits certain materials or features and allows all others. For example: signs shall not be made of wood. Most standards incorporate elements of both approaches. Table 1: *Examples of Rural Design Standards* provides examples of some concepts that would provide uniform standards for subdivision entry signs that would be appropriate for rural communities.

Table 1. Examples of Rural Sign Design Standards

Standard	Proscriptive Approach	Restrictive Approach
Form of Sign	Signs must be freestanding monument signs or post signs. *Or* Signs may be integrated or attached to landscape or architectural features.	Prohibit attachment/integration with landscape or architectural hardscape features.
Materials	Signs must be made of natural materials, such as stone, metal, etc.	Signs may not be made of plastic and other synthetic materials.
Colors	Signs must use a neutral palette. This can be defined specifically.	Signs may not be bright colors.
Character Size	Character height must be at least 12” in height	Characters may not exceed 18” in height.
Lighting	Signs may only be illuminated with shielded external illumination.	Signs may not be illuminated. *Or* Signs may not feature internal illumination.

Table 1. Examples of Rural Sign Design Standards		
Standard	**Proscriptive Approach**	**Restrictive Approach**
Other Features	Not Applicable.	Signs may not incorporate moving elements, such as fountains, waterfalls, and windmills.
Setbacks	10' setback 20' setback	

Overall, we do not recommend the adoption of design standards for subdivision signs. The current conditions appear to feature reasonable signs that are intended to provide a tasteful yet unique element of community character. Any design standards that would limit integration with architectural and landscape features would also make several existing signs nonconforming.

Alternatives to Tree Save Areas

The Commissioners discussed how the tree save area regulations apply to development sites without existing trees and requested more information about potential alternatives such as the use of algae in constructed ponds.

We do not recommend allowing algae in constructed ponds to serve as alternative compliance for tree save areas. We evaluated the possibility of using freshwater ponds as an alternative method of compliance with the tree save area requirement in the planning and scientific literature. It appears that scientists believe that algae cultivation in freshwater and saltwater could serve as a significant strategy to capture carbon.[11]

However, it appears that the primary efforts to implement this strategy are currently large-scale facilities to offset carbon for major carbon emitters. This process requires the construction of circulating ponds and also requires the burial of the algae harvest in the desert to prevent its return to the atmosphere. An example of this type of implementation is by Brilliant Planet, Ltd.[12] At the present time, it does not appear that any local governments use algae as a carbon offset comparable to tree canopy preservation. Therefore, we do not recommend this strategy for inclusion in the updated UDO.

[11] Helen Onyeaka, et al., "Minimizing Carbon Footprint via Microalgae as a Biological Capture," *Carbon Capture Science & Technology* 1 (2021): 100007, https://doi.org/10.1016/j.ccst.2021.100007.
[12] See https://www.brilliantplanet.com/what-we-do/our-process.

DIRECTION NEEDED FROM THE BOC

Tree Protection (Chapter 6, Section 6.3)

(1) Should the UDO require protection of individual specimen, grand, or heritage trees?
- If so, should the preservation requirement be based on the Tree Protection Ordinance Working Group's (TPWG) report (including grand, historic, landmark, and meritorious trees)? Or should the UDO use another clear and easily interpreted measure instead of the percentage of the state champion and TPWG's categories? An example would be any tree of certain species over a threshold diameter at breast height (DBH).
- Note it is unclear whether the N.C.G.S. authorize local governments to regulate the protection/removal of individual trees.

(2) Should we increase the required minimum percentage of tree save area (TSA) in the R5 District from 45% to 60% per the TPWG recommendation?
- See Table 6.3.3-1: *Tree Preservation Standards by District*
- TSAs apply to new major subdivisions and to new non-residential land development activity that requires approval of a stormwater plan.
- For development sites that do not have sufficient tree canopy to meet the tree save requirement, the current UDO draft (see 6.3.3.B.2) requires the planting of 2-inch caliper canopy trees at a rate of 100 trees per acre. Increasing the TSA percentage to 60% could make development on certain sites cost prohibitive.
- The UDO proposes several additional requirements that will result in conservation areas, open space, and landscaped areas in new developments:
  - New development and certain expansions of existing development require parking lot landscaping and landscaping around building foundations.
  - Some development types require buffers along the exterior boundary of the development (see 4.4.7: *Transitional Buffers*).
  - Riparian buffers (30 ft to 100 ft in width, depending on the surface water classification) are required in accordance with 8.6: *Riparian Buffer Standards*.
  - Known cemeteries require a 30-ft buffer (see 6.2: *Cemetery Buffers*).
  - New major residential subdivisions, apartment complexes, and mixed use developments require open space (15% to 45%, depending on development type). See 6.1.3: *Minimum Amount of Open Space Required*. Transitional buffers and riparian buffers may count as up to 25% (each) of required open space. Tree save areas may count as required open space (but cannot be the only open space). See 6.1.5: *Composition of Open Space*.

(3) Should the UDO allow reductions in the total amount of TSA as an incentive when the TSAs are in preferred locations?
- See 6.3.3.E: *Incentives for Preferred Locations*

(4) Should the UDO allow a reduction in TSA, as proposed by 6.3.4: *Removal of Trees*?

(5) Should § 6.3.4.D. (administrative approval of tree removal) be removed or limited by providing more stringent standards for approval of tree removal?

(6) Should the UDO allow for alternative compliance for tree planting in TSAs? Or should the alternative compliance standard be clarified or tightened?
- See 6.3.3.B.2.(b)

(7) Should the UDO allow required transitional buffers and riparian buffers to count as TSAs?
- See 6.3.2.D: *Tree Save Areas and Other Tree Requirements*
- TSAs apply to new major subdivisions and to new non-residential land development activity that requires approval of a stormwater plan.
- Depending on the zoning district, anywhere from 20% to 45% of a development site must be conserved as TSA. If transitional buffers and riparian buffers cannot count as TSA, then the actual conserved area of a development site will likely be significantly higher than 20% to 45%. This could risk making development impracticable on certain sites.

Subdivisions (Chapter 5)

(1) Should the UDO require all new subdivisions in areas designated as Conservation on the Future Land Use & Conservation Plan Map to be conservation subdivisions? This would exclude the development of conventional subdivisions in these areas.
- Alternatively, should the UDO require all new subdivisions in only the R5, Conservation Residential District, to be conservation subdivisions?
- See 5.4.1: *Conventional Subdivisions* and 5.4.2.: *Conservation Subdivisions*
- The primary differences between conventional and conservation subdivisions, as proposed in the Module 2 Public Review Draft, are:
    - *The amount of open space required.* Conventional subdivisions require at least 15% open space, while conservation subdivisions require at least 45%. See 6.1.3: *Minimum Amount of Open Space Required.*
    - *The required lot sizes.* The zoning district minimum lot area does not apply in a conservation subdivision. Lots in a conventional subdivision must meet the zoning district minimum lot area. Most areas designated as Conservation on the FLUCP Map are zoned R5, where the minimum lot area is 3 acres, and the average lot area is 5 acres.
    - *The presence of transitional buffers.* Conservation subdivisions require a 50-ft Type D transitional buffer around the development boundary. Conventional subdivisions require a street buffer only if they are located along U.S. 15-501 between Smith Level Road and the Town of Pittsboro, U.S. 64, or U.S. 421. See 5.4.2.F.4 and 4.4.7.I.

Open Space (Chapter 6, Section 6.1)

(1) Should the UDO mandate all required open space in a development to be contiguous?
- Alternatively, should the UDO require all open space only in a conservation subdivision to be contiguous?
- If so, what does "contiguous" mean?
- For example, in the draft there is an incentive for providing wildlife corridors. That incentive requires all Natural Areas to be connected by a wildlife corridor[13] at least 50 feet in width.
- This approach can create more efficient development, as it tends to cluster lots and infrastructure (e.g., streets) closer together. However, there are practical limitations that may make contiguous open space difficult to achieve or that could compromise other goals. For example, requiring all open space to be contiguous could prevent future street connections to adjacent properties. It also could limit creativity in development/ subdivision design. Also, each development site is unique, and areas most suitable as open space may not already be contiguous.

(2) Should the UDO allow a density bonus for developments that provide more open space than required by 6.1.3: *Minimum Amount of Open Space Required*?
- If so, how much additional open space should a development include to qualify for a density bonus, and how much of a density bonus is appropriate?
- An approach that scales according to the amount of additional open space provided may be appropriate. For example, for every 5% increase in total open space, the density may increase by 1 dwelling unit (du).
- Alternatively, the approach could use an overall cap. For example, developments that provide at least 10% more open space than required may increase density by 3 du.

Signs (Chapter 4, Section 4.7)

(1) Should the UDO provide design standards for residential development signs in a way that preserves the rural character of Chatham County? If so, should the regulation limit:
- Attachment to architectural and landscape features by requiring a freestanding monument or post sign not attached to any other feature?
- Materials (possibly limited to masonry, wood, and other "natural" materials)?
- The palette of colors available for these signs?
- The location of these signs by providing a setback?
- The design of signs only in more rural districts?

(2) Should the UDO require downlighting for all signs (including billboards)?

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[13] The proposed definition of *wildlife corridor* is "an area of land in a relatively natural state that is unimpeded by significant development disturbance, including roads, such that a particular species can travel between core habitats along the corridor." This definition is from the North Carolina Wildlife Resources Commission's Green Growth Toolbox, Appendix D, page 125.