

ISSUE PAPER:
LOSS OF OPEN SPACE IN WAKE COUNTY



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April 22, 2005

INTRODUCTION

This issue paper has been prepared to examine the problem of the loss of open space in Wake County. The first section summarizes the nature and extent of this problem, followed by an analysis of the key laws, policies, regulations, and programs that impact this problem. The next section contains a discussion of the policy objectives, criteria, and potential alternatives relevant to solving the problem of the loss of open space in Wake County. This paper concludes with my recommendations for action and further study. For the purposes of this paper, “open space” is defined as any non-urban parcel of land or water, including agricultural and forest lands, that remains relatively undisturbed by development. The term “working lands” is used to refer to land that is in active use for agricultural, forestry, or other resource industries.

PROBLEM DEFINITION

This section includes a summary of the nature and extent of the open space issue currently facing Wake County, discussion of its possible causes and significance, and a list of the stakeholders and uncertain/disputed issues relevant to this problem.

Problem and Extent

Wake County is facing the rapid loss of open space due to urbanization. As of 2003, over 41% of the county had been developed. Only 9% of the total land mass is protected as open space (WC, 2003; p. ES-1). The 2003 Open Space Plan prepared by the Wake County Department of Parks, Recreation & Open Space calls for action to increase this percentage, stating that “Given the current rate of growth and development, if the County does not begin to emphasize land conservation policies and programs, an estimated 78 percent of the county land area will be developed by the year 2020” (WC, 2003; p. ES-1).

Possible causes

Wake County’s shrinking stock of open space can be attributed to a number of factors, including rapid conversion of undeveloped land to developed uses; the declining viability of working lands; the fragmented nature of local governance in Wake County; the importance of politics in open space protection; and myths regarding the economics of alternative land uses.

Rapid Population Growth and Urban Expansion

As of 2000, North Carolina was the 6th fastest growing state in the nation, 5th in terms of drawing new residents from other parts of the country. North Carolina’s population grew 13.7% between 1990-1998, from 6.63 million to 7.54 million residents (Brookings, 2000). Population growth is focused on the state’s large metropolitan areas (Brookings, 2000). Between 2000 and 2020, the Raleigh-Durham Metropolitan Area will grow by 560,372 people, or 50 percent (TJCOG, referenced in Styers, 2002). Past population growth has translated into steep land conversion rates. Between 1950 and 1990, the number of

urbanized acres in the Triangle region increased 944%, while the population grew only 260% (TJCOG, referenced in Styers, 2002).

Wake County has absorbed a significant share of the Triangle's growth. This county experienced a 37.7% growth in population between 1990 and 1999, making it the fastest-growing county in North Carolina and the 17th fastest-growing county in the nation during this period (WC, 2000). In the year 2000, Wake County projected that their population would grow by about another third by 2020, to a total of about 954,000 (WC, 2000).

Declining Viability of Working Lands

The viability of Wake County's resource-based land uses has declined rapidly in the face of the growth pressures described above. Fragmentation of working lands as a result of sprawling development decreases the productivity of working lands. Other landscape-scale issues are at work as well, including ground and surface water contamination, soil erosion, and declining soil quality. In addition, farmers and foresters find it more difficult to maintain a profitable operation when their property taxes increase as a result of the expanding urban fringe and accompanying development speculation.

Fragmented Local Governance

Wake County encompasses approximately 857 square miles of land and water. Of this, the county planning jurisdiction was 450 square miles in 2003. The remainder of land within county borders is contained within 12 municipalities, each of which has its own government and planning priorities. Over the next 40 years, as these municipalities expand their jurisdictions, the county expects that only 164 square miles will remain in Wake County's planning jurisdiction (WC, 2004). Fragmented local governance translates into fragmented local planning, a problem which creates significant challenges for county-wide open space conservation efforts.

Importance of Political Environment in Open Space Conservation

Open space provides numerous public goods, including aesthetic, recreational, and environmental services (see “Significance,” below). Public goods are non-excludable: once they are produced it is impossible or very costly to exclude anyone from using them (Fausold and Lilieholm, 1996). Non-excludable goods such as open space are less interesting to potential private purchasers, who do not see a direct economic benefit from all open space amenities (e.g. watershed protection). As a result, open space protection typically falls to the nonprofit and governmental realms. Wake County’s municipalities and county government have historically been pro-development and anti-growth management. This political climate has stifled governmental open space protection efforts due to insufficient resources for land acquisition and lack of support for open space planning. This political environment has also posed a challenge to nonprofit conservationists trying to promote a regional network of open spaces.

Land Use: Financial Misconceptions

A growing number of communities are challenging the assumption that development always boosts municipal budgets, using cost of community service analyses to examine the actual fiscal impact of alternative land uses. According to Crompton (2001), analyses consistently show that over a wide range of residential densities, the public costs associated with residential development exceed the public revenues that accrue from it. In fact, Mitch Renkown at NCSU completed a cost of community service study for Wake County in June 2001. He found that that farm, forest, and commercial land uses subsidize residential land uses in Wake County. Renkown found a higher degree of cross-subsidization of the residential sector than has been found in most other studies (Renkown, 2001). Wake County documents reviewed in the course of writing this issue paper did not reference Renkown’s study.

Additionally, multiple studies on the economic benefits of open space (e.g. Anderson and West, 2003) have found that open space amenities are capitalized into the sale price of nearby homes, benefiting both developers (through higher sale prices) and municipalities (through increased property tax revenues). It appears, however, that not much research of this type has yet been undertaken in Wake County.

Significance

Open space provides numerous benefits to Wake County which will be lost or compromised if current development patterns continue unaltered. **Table 1** summarizes the primary benefits provided by the different types of open space (adapted from WC, 2003):

Table 1: Benefits of Open Space

<i>Open Space Type</i>	<i>Benefits</i>
All types of natural lands	Aesthetic benefits; Air quality enhancement; Property value increases; Increase in tourism and recreation-related revenues; Cost savings vs. certain alternative uses
Water recharge areas, stream buffers, wetlands	Filter polluted water, protecting drinking water supplies; Facilitate storm water and flood control
Greenways and other recreational land	Health/recreation benefits; Alternative transportation opportunities
Culturally and/or historically significant sites	Preservation of local history for current and future residents
Large, contiguous tracts of land	Habitat/migration corridors for many plant and animal species

The significance of Wake County’s open space problem, however, is more than the loss of the benefits listed above. It is also the financial, environmental, cultural, aesthetic, and human health-related consequences of the sprawling development rapidly replacing this county’s open spaces.

Stakeholders

There are numerous stakeholders affected by the loss of open space in Wake County, including:

Wake County government. In March, 2003, the Wake County Department of Parks, Recreation & Open Space finalized the Wake County Open Space Plan, which set a long-term goal of 30 percent open space for the county, including 9.5% existing protected open space (WC, 2003; p. ES-3). Numerous agencies influenced this plan, including the Planning Department and Environmental Services. The Wake County Soil and Water Conservation District also has a significant interest in open space protection.

12 Wake County municipalities. Each municipality in Wake County has their own perceived needs for open space within its jurisdiction. At the request of the county, each of these municipalities developed its own open space plan for incorporation into the 2003 county-wide plan.

County residents. Loss of open space diminishes familiar and beloved landscapes, and as it is often replaced by conventional low-density development, it has fiscal, environmental, and congestion costs for all county residents. Wake County voters are in support of open space preservation; in the November 2004 elections, voters approved a \$26 million dollar open space bond referendum by a significant margin.

Wake County environmental groups. Citizen action groups promoting open space protection in Wake County include Wake County Keep America Beautiful and the Sierra Club Wake County Chapter (Capital Group), who formed an Open Space Protection Campaign.

Developers. Open space functions both as supply of potentially developable land and as a potential amenity to be preserved in new development. An impending shortage should cause concern to developers, especially as constrained land supply may drive up development costs. Groups that represent developers' interests include the Home Builders Association of Raleigh-Wake County and the Triangle Commercial Association of Realtors.

Residents elsewhere in the Triangle region. The loss of open space in Wake County correlates with a greater percentage of impervious surfaces, which impairs water quality both for county residents and for people living elsewhere within affected watersheds (could be across county lines). Similarly, conversion of open space to developed land causes environmental and other problems/shortages not necessarily confined to jurisdictional boundaries.

TJCOG and regional land trusts. Several regional agencies, such as the Triangle J Council of Governments and the Triangle Land Conservancy, are working to achieve a functional "green infrastructure" in this region. Wake County's remaining open spaces are an integral part of this plan.

Wake County agricultural and timber workers. Farmers and tree harvesters in Wake County are also interested in open space preservation, especially as it relates to working lands. The Wake County Farm Bureau represents farming interests in this county.

Uncertain or disputed issues

A number of uncertainties surround Wake County government's handling of the open space issue. For example, it is unclear if internal consensus been reached between various Wake County departments regarding the 30% open space goal articulated in the 2003 plan. Additionally, the degree to which that plan has been implemented (and successful) to date is uncertain.

The economics of open space conservation and alternative land uses are still being researched and disputed. Most measures are necessarily indirect; there is no market for watershed protection, for example, or provision of recreational opportunities. Further general and place-specific research on these issues will inform better public and private decisions about open space.

Conclusion

The loss of open space in Wake County is being driven by the rapid development of this area. Open spaces provide numerous and important benefits that are lost when this land is converted to other uses, particularly to low-density residential development. This issue is significant to numerous stakeholders, both within this county and elsewhere in the region. While Wake County has prepared an aggressive open space plan, it is uncertain to what degree this represents a unified vision that is being successfully implemented. The next section will address the adequacy and current effectiveness of the myriad of programs designed to protect Wake County's open spaces.

RELEVANT EXISTING LAWS, POLICIES, REGULATIONS

This section provides a summary of existing government laws, policies, regulations, and programs relevant to the problem of loss of open space in Wake County. A complete summary of federal, state, regional, county, and municipal programs reviewed can be found as **Appendix A**. While this is not an exhaustive list, it captures those laws, policies, regulations, and programs determined to be most directly relevant to open space preservation in Wake County. County and municipal programs are particularly emphasized, as they assume bulk of the responsibility for long-term program support and implementation.

Assessment of Key Laws/Policies/Regulations/Programs

Below is a summary of the state, regional, county, and municipal laws, policies, and programs determined to be the most critical to achieving Wake County's open space goal.

State Enabling Acts. The North Carolina Water Supply Watershed Protection Act (1992) provides a legal basis for very low-density zoning in watershed areas, such as Wake County's R-40 and R-80 watershed zones. This is particularly relevant in Wake County, which is focusing almost exclusively on protection of water supplies in its open space planning. A second law, the Farmland Protection Enabling Act (1985) allowed Wake County to establish its Voluntary Agricultural District, which currently contains over 2000 acres of farmland (Upton et al, 2004).

Regional coordination and conservation efforts. Groups such as the Triangle J Council of Governments and the Triangle Land Conservancy are attempting to protect open space and coordinate regional conservation efforts in three primary ways: 1) acquiring easements, development rights, and fee simple land purchases throughout the county and the region; 2) long-term regional conservation planning through the Triangle Greenprint initiative; and 3) tracking and monitoring conservation acquisitions of all types throughout the region using an interactive database. These are important regional efforts. However, since these groups must divide their time and funds over a seven-county region, they cannot be relied upon to substantially contribute to open space preservation in Wake County.

Wake County Municipalities. As part of the county open space planning process, Wake County provided funds to each of its 12 municipalities as an incentive for the development of municipal open space plans. County government then knit these plans together, along with its own plan for conservation of county open space, to produce the 2003 Wake County Open Space Plan. The municipal open space plans, as summarized in the county-wide plan, identified certain land parcels, stream corridors, and greenway areas and prioritized them for protection. Most plans recommend open space acquisition by the town as the primary means of accomplishing open space protection, though few appear to specify the timetable and funding sources for these acquisitions. Some plans also recommend specific regulatory changes, such as the joint Wendell and Zebulon plan which included a model conservation subdivision ordinance to replace its current cluster ordinance (WC, 2003).

Cary's open space program is the strongest of the 12 Wake County municipalities. This plan includes a detailed threat-of-loss analysis that prioritized land for acquisition based on its probability for development (Cary, 2001). Further, this program is well-funded. In fiscal year 2002, the town council approved spending \$11.2 million for open space preservation and setting aside \$1 million annually (beginning in 2003) from utility rate revenues to support open space acquisition (Cary website).

Wake County Regulations, Policies, Plans, and Programs. The most significant Wake County programs in terms of open space preservation are summarized below in **Table 2**.

Table 2: Wake County Regulations and Programs Relevant to Open Space Conservation

Regulation/Program	Enacted	Description/Relevance
<i>Planning Department: Development Management</i>		
Subdivision Ordinance	Updated January 2005	Sets review standards for cluster and open space subdivisions, with special requirements for development in water supply watershed areas.
County Land Use Plan	Updated 2003	Influences development pattern in county-controlled areas, sets (limited) goals and policies for open space conservation.
<i>Farmland Preservation</i>		
Wake County Voluntary Agricultural District Program	2002	Ordinance providing for the voluntary preservation of farmland from non-farm development. Protected 13 farms in Wake County totaling 2004 acres as of May 2004 (Upton et al, 2004).
Working Lands Programs	1989	Voluntary purchase of development rights program (poorly funded); preferential (current use) taxation program; education for farmers undertaking estate planning (WC website).
<i>Open Space Planning/Acquisition</i>		
Open Space Plan	2003	Plan to permanently protect at least 30% of Wake County lands as open space. Sets priorities for open space acquisition and methods for program implementation. Incorporates open space aspects of development management and watershed protection.
Parks, Recreation, and Open Space Department: Open Space Conservation	1999 ¹	Permanently protects open space in accordance with 2003 plan, using county funds and partnerships with nonprofits and municipalities.
<i>Watershed Protection</i>		
Watershed Master Plan	2000	Plan serves as the county's strategic plan for protecting and restoring county streams. Protection of watercourses is one of the most important open space goals for Wake County.

Though data on the effectiveness of these programs in terms of open space conservation are not readily available in all cases, it is possible to draw a few conclusions. As of 2003, *all* of the programs in place to protect open space were proving ineffective at halting the rapid conversion of Wake County open spaces to developed uses. In 2003, Wake County natural lands were being developed at the rate of 27 acres per day (WC, 2003). The 2003 Wake County Open Space Plan predicted that if current trends continued, 78% of county lands would be developed by the year 2020 (WC, 2003; p. 1-1).

It appears that the Wake County Open Space Plan represents the most concerted effort in recent years to protect this county's remaining open spaces. This plan, as summarized below in **Table 3**, includes regulatory objectives associated with the county's development management and watershed protection programs. As such, an evaluation of progress on this plan to date provides insight on the effectiveness of

¹ According to the Wake County Open Space Plan, the program had been "ongoing for years, but began in earnest in 1999 with the acquisition of key parcels of land" (WC, 2003; p. 4-8).

several county policies related to open space. The Wake County Department of Parks, Recreation, and Open Space will soon be undertaking a thorough evaluation and update of the 2003 plan with help from an outside consultant. My abbreviated evaluation is summarized below in **Tables 3 and 4**. Cary was selected as the representative municipality for evaluation, as a review of the current policies of all 12 municipalities was not within the scope of this review. The county’s farmland preservation programs are assessed separately, below, as the Open Space Plan does not directly address this objective.

Table 3: Assessment of Land Protection Objectives in 2003 Wake County Open Space Plan

Strategy Type	Strategy	Responsible Party	Goal (Acres)	Progress
Acquisition	Targeted acquisition of priority land	Wake County	30,000 over 25 years. 2003 goal: 500 2004 goal: 1000 2005 goal: 1000.	448 acres acquired in 2003, 1085 in 2004, and 97.53 to date in 2005. Acquisition by Wake County, Wake County municipalities, nonprofits, and various partnerships between these entities. Easements and fee simple purchases (WC, 2005).
Regulatory	Protect FEMA-designated floodplain land by prohibiting floodplain development	County and municipal governments	60,000	Wake County Zoning Ordinance regulates development in the 100-year floodplain for hazard purposes, but does not prohibit development in these areas. Wake County Subdivision Ordinance prohibits subdivisions in hazard areas (including floodplain) which will endanger public safety. Cary prohibits stream buffer development, but not floodplain development in general (Lewis, 2005).
Regulatory	Conservation subdivisions	County and municipal governments	22,000	Wake County allows for both cluster and open space subdivisions in its subdivision ordinance as well as its draft Unified Development Ordinance. Cary provides for “Cluster Housing” in its current Land Development Ordinance.

Table 4: 2003 Wake County Open Space Plan – Funding Assessment

Funding Mechanism	Responsible Party	Progress
Pursue \$25-30 million open space bond referendum in November 2003	Wake County	A \$26 million open space bond referendum was passed in November 2004.
Develop cooperative strategy to define and secure recurring funding source	Wake County and municipalities	It does not appear that a recurring funding source has yet been secured, though several recent acquisitions have been jointly funded by the county and individual municipalities.
Establish a county-wide water, sanitary sewer, stormwater/watershed management utility. Portions of utility revenues to be used to fund open space acquisition.	Wake County and municipalities	It does not appear that such a utility has yet been put into place.

As the above tables indicate, in the past two years, Wake County has been roughly meeting its annual acquisition targets, using funds generated from the 2000 and 2004 bond referendums, state and federal grants, and municipal partners. Information on protected acreage associated with the two regulatory strategies (prohibition of floodplain development and conservation subdivisions) are not readily available.

Despite its open space acquisition successes to date, the Wake County Open Space program does not seem to be reaching its full potential. A weakness of Wake County's current approach to open space conservation is that it focuses only on land acquisition within stream corridors, to the exclusion of upland areas. Wake County's political environment has forced planners to be conservative, advancing policies designed to achieve only the most widely accepted (water supply-related) open space agenda. This same phenomenon is reflected in the Wake County Land Use Plan. Though this plan supports open space conservation in general by allowing for cluster/open space subdivisions, its primary conservation recommendation is down-zoning and special development regulations in water supply areas.

Another challenge to successful implementation of the Wake County Open Space Plan is coordination between the county and its 12 municipalities. Currently, all open space planners in the county meet quarterly. Ideally, these meetings would be more frequent, and there would be a system in place to track all open space acquisitions. As mentioned in Table 4, it does not appear that agreement has been reached on recurring funding sources or a county-wide utility. These funding sources will need to be secured in order for Wake County to reach its open space conservation goal of 30%.

Finally, this plan does not directly address farmland preservation. Recent data provided by the Wake County Department of Parks, Recreation, and Open Space indicate that county funds, along with some federal grant money, have been used to protect two farm properties between 2001 and 2005 (WC, 2005). These properties, totaling over 200 acres, represent only 10% of all open space protected during this period, though agricultural land represents 70% of the remaining open space in Wake County (WC, 2005). The Wake County Working Lands Program, summarized in Appendix A, has not yet begun its purchase of development rights in earnest, due primarily to funding shortages. Data from the American Farmland Trust indicates that Wake County's Voluntary Agricultural District Program had protected 13 farms in Wake

County totaling over 2000 acres as of May 2004 (Upton et al, 2004). However, if farmers can remove their land without penalty from this program, enrolled land is not protected in any real sense.

Conclusion

This section has presented my analysis of the key laws, policies, and programs relevant to the loss of open space in Wake County. As of 2003, the myriad of policies and programs in place to protect open space were not proving effective. Since 2003, Wake County has made progress on the objectives set forth in the Wake County Open Space Plan. However, loss of open space in Wake County remains a significant issue. The effectiveness of county conservation efforts is limited by a focus on stream corridors to the exclusion of upland areas. The lack of human and fiscal resources to support the necessary collaboration and funding agreements between Wake County and its municipalities represents an implementation challenge. Further, Wake County farmland protection programs are currently poorly defined and poorly funded, and are not integrated with other open space objectives in the county's Open Space Plan.

The following section of this paper identifies the main criteria for an adequate solution to the problem of loss of open space in Wake County, and analyzes three alternatives in detail.

EVALUATION OF ALTERNATIVES

This section begins by identifying the two primary strategies for protecting open space and my chosen policy objectives for Wake County associated with each strategy. Criteria and potential alternatives for solving this problem comprise the remainder of this section. Each alternative is considered on its own, though a successful long-term open space program would employ numerous complementary strategies as part of a comprehensive program.

Policy Objectives

There are two primary strategies for protecting open spaces. One is to directly protect open space, and the other is to promote compact development, which indirectly protects open space. I have identified three policy objectives associated with the strategy of directly protecting open space (OS 1-3), and two objectives associated with promoting compact development (CD 1, 2). These policy objectives are listed below in **Table 5**.

Table 5: Policy Objectives for protecting Wake County Open Space (by strategy)

Strategy	Policy Objective
OS Objective 1	Protect an interconnected network of open spaces, including both upland and watershed areas. Prioritize protection of areas of cultural, historical, and/or environmental importance.
OS Objective 2	Maintain the majority of Wake County's working lands in their current use
OS Objective 3	Require all new large-scale subdivisions to incorporate at least 10% open space
CD Objective 1	Direct the majority of new growth to existing developed areas
CD Objective 2	Permit new growth only in accordance with service provision

Criteria for Evaluation of Alternatives

In order for any alternative to count as a solution in Wake County, it must be politically feasible at both the county and municipal levels, legally feasible in North Carolina, effective at achieving its policy objective, and efficient (maximize effectiveness relative to cost). Ideally, potential solutions would also promote county-wide planning efforts and have minimal associated side effects. These criteria were tailored

to fit this issue, according to my assessment of current weaknesses of the regulations, policies, and programs that relate to the loss of open space in Wake County.

Summary of Alternatives

The following table presents alternatives for protecting open space in Wake County. Alternatives have been included for both the direct and indirect strategies of open space protection. Several of the alternatives listed in this table have already been proposed and/or are already in some stage of implementation. County and municipal governments would be responsible for implementing all of these tools. Three tools (italicized in **Table 6**) were chosen for detailed analysis because they meet the criteria listed above, do not appear to have been implemented to date, and involve a level of complexity deemed worthy of closer examination.

Table 6: Alternatives for Open Space Preservation in Wake County

Relevant Objective	Alternative Type	Alternative	Current Progress
Strategy: Direct Preservation of Open Space			
OS 1	Acquisition	Targeted land acquisition	Ongoing
OS 1	Regulatory	Prohibit floodplain development	Some partial protections in place
OS 1	Regulatory	Special Highway Overlay District zoning along highways	Already done by some municipalities
OS 1	Regulatory	Establish rural historic districts	Proposed but not implemented?
OS 1	Regulatory	Open space land reservation (official maps)	None, but of questionable legality in NC
OS 1, 2	Regulatory	Urban Growth Boundary	None, but of questionable political feasibility
OS 2	Acquisition	Purchase of development rights program for working lands	Ongoing
OS 2	Incentive	Preferential taxation for working lands	Ongoing
OS 2	Incentive/Regulatory	Wake County Voluntary Agricultural District Program	Ongoing
<i>OS 2</i>	<i>Regulatory</i>	<i>Agricultural Zoning</i>	<i>None?</i>
Funding for OS 1 and 2	Regulatory	Open space impact fees (county-wide)	Ongoing in Raleigh, no statutory authority elsewhere in county
OS 3	Regulatory	Conservation Subdivisions	County and certain municipalities have incorporated alternative subdivision standards (voluntary)
Strategy: Promotion of Compact Development			
<i>CD 1</i>	<i>Incentive</i>	<i>Two-rate taxation to promote compact infill development</i>	<i>None?</i>
CD 1	Incentive/Regulatory	Transfer of Development Rights	None, but of questionable political and legal feasibility
<i>CD 2</i>	<i>Regulatory</i>	<i>Establish county-wide Adequate Public Facilities Ordinance</i>	<i>Urban Service Areas designated, progress towards county-wide water/sewer system</i>

Detailed Analysis of Alternatives

My in-depth evaluation of the three selected alternatives is summarized below in **Table 7**, and detailed in the text that follows.

Table 7: Summary of Analysis of Three Alternatives

Alternative	Political Feasibility	Promotes County-Wide Planning	Effectiveness	Efficiency	Other Considerations
Agricultural Zoning	Low/Medium, per comment from East Raleigh/Knightdale plan.	Yes. Significant agricultural lands will be present county-wide.	Medium. Quick and easy to implement, but can be easily altered.	Medium-High. Low cost, but effectiveness could easily be undermined.	Reduces conflicts between farmers and non-farming neighbors, but can also reduce land values. Political feasibility? Farmer perspective?
APFO	Medium. Has essentially been proposed in a Land Use Plan appendix. Possible resistance to development prohibition in non-serviced areas. Infrequently used in NC.	Yes. Hinges on county-wide service provision.	Medium. Depends on existing capacity and adequate funding for capacity expansion.	Medium. Moderate-heavy admin. costs, but may pay for itself in the long run by limiting sprawl.	Many potential pitfalls. Must be implemented in close consultation with county plans and CIP. Political feasibility?
Two-rate taxation	Medium. Potential resistance from large landowners and residents concerned about density	Yes. Requires cooperation of most/all of the larger municipalities to be effective.	Medium (?)	Unknown. Only implemented to date in Pennsylvania.	Must be limited geographically and accompanied by pro-development planning programs to prevent sprawl. Effectiveness? Net cost?

Direct Open Space Protection: Agricultural Zoning

Agricultural protection zoning is an inexpensive way to protect large areas of agricultural land. Compared to purchase of conservation easement and transfer of development rights programs, this tool can be implemented relatively quickly. However, no form of zoning is permanent. Changes in the political climate could open up large areas of agricultural land for development. Further, agricultural zoning can reduce land values, which decreases farmers' equity in land, and may be difficult to monitor and enforce on a day-to-day basis (AFT, 1998).

An agricultural zoning district would specify allowed land uses and residential density². Ideally, it would also contain right-to-farm provisions and authorize commercial agricultural activities that enhance farm profitability (AFT, 1998). North Carolina cities have the authority to regulate agricultural operations through zoning, as there is no agricultural exemption in the city zoning enabling statute (Owens, 1998). This power is presumed to extend to counties as well. A critical unknown with agricultural zoning is whether or not it would be politically palatable. The East Raleigh/Knightdale area plan states that the planning committee for this area “opposes severely limiting development by down zoning rural land or agricultural zoning. The Committee opposes any farmland preservation options that are not totally voluntary” (p. C.16).

Direct Open Space Protection: Adequate Public Facilities Ordinance

An Adequate Public Facilities Ordinance (APFO) for Wake County would help to regulate the timing and location of future development by linking development approval to planned county-wide facility expansion. The key elements of such a program would be county-level control of facilities planning (most likely hinged on water and sewer provision) and designation of appropriate phased service areas. Wake County is making progress towards both of these elements, without formalizing an APFO.

The Wake County Water/Sewer Plan calls for the development of a single county water and sewer utility by 2015. Currently, Wake County has a fragmented municipal water/sewer system, and Wake County does not own, operate, or maintain any water or sewer facilities (WC, 2003b). According to the Wake County Capital Improvement Program, the county supports the merger of municipal utility systems and has demonstrated a willingness to provide funding for merger feasibility studies (WC, 2004b). Raleigh, Garner, and Rolesville water and sewer systems have been consolidated and merger agreements executed. Wake County, Cary, Apex, Holly Springs, Morrisville and Fuquay-Varina have entered into an inter-local agreement to fund a collaborative study of alternatives for a regional wastewater treatment plant to serve the western part of the County (WC, 2004b).

² Residential density in agricultural districts ranges from one dwelling per 20 acres in the eastern United States to one residence per 640 acres in the West (AFT, 1998).

The Wake County Land Use Plan was amended in 1999 to coordinate with the Water/Sewer Plan. In its amended form, this plan designates Urban Services Areas (USAs) which are split into Short-Range and Long-Range USAs. Short-Range areas apply to land within one mile of projected municipal service extensions during next 10 years, as designated on the Water/Sewer Plan's Wastewater Facilities map. New development in these areas will be required to connect to municipal water and sewer systems where practicable. Developers are not prohibited from developing in long-term USAs; they are required only to dedicate rights-of-way necessary for future transportation. Municipalities will not service non-urban areas, but development is allowed to continue in this area as long as it does not "create service needs beyond that already found in and typical of non-urban areas" (WC, 2003b).

An APFO would formalize Wake County's commitment to growth management and adequate facilities provision. One particular pitfall associated with APFOs is worth mention here. APFOs do not prevent growth in remote areas which happen to have public facilities available, nor do they prevent development in high-growth markets where developers can afford to pay facility costs (Kelly, 1993a and Kaiser and Burby, 1988). As a result, such an ordinance should be implemented in accordance with a county land use plan that clearly specifies desired growth areas, as well as a spatially explicit capital improvement plan. Wake County could choose to build in exemptions to the APFO as necessary to promote growth in certain areas, promote cluster development that preserves open spaces, etc.

Promote Compact Development: Two-Rate Taxation

Two-rate taxation involves reduction of taxes on land improvements in already-developed areas to spur infill development. Sixteen cities in Pennsylvania, including Pittsburgh, use split-rate systems (England, 2002 and Brunori, 1998). A University of Maryland study compared Pittsburgh to 14 other cities during the decade before and after Pittsburgh implemented its two-rate taxation system. They found that Pittsburgh "had a 704 percent increase in the value of building permits, while the 14-city average decreased by 14.4 percent" (Ginsberg, 1997). The authors attribute this finding at least in part to two-rate property taxation.

Wake County municipalities would bear the administrative burden of this program, as they control the majority of already-developed land in the county. There could be an overall net loss or gain in property taxes. Though the tax on building improvements would be reduced, the tax on land value would probably be increased, and reduced rate might spur infill development sufficient to boost tax revenues over the status quo. This program could generate bipartisan support, partly due to the fact that tax burdens would decrease for a large majority of homeowners, especially if services remained constant (see Brunori, 1998). Businesses might also support land value taxation if they can be convinced that it would spur development. Opposition should be expected, however, from land-rich property owners upon whom the additional tax burden would fall (Brunori, 1998). For those individuals, the policy may include deferments of tax payments. Citizens concerned about density in general might also oppose this strategy.

Because land value taxation is a pro-development tool, it must be limited geographically in order to avoid promoting sprawl in areas not appropriate for development (Daniels, 2001). Additionally, Skaburskis (1995) cautions that in order for land value taxation programs to produce the desired increased in density, they must be accompanied by aggressive pro-development planning programs. Otherwise, a shift to land value taxes increases the cost of holding property vacant. An increase in holding costs favors early development, and early development means less capital per site and a reduction in overall project densities (Skaburskis, 1995).

Conclusion

This section has presented strategies, policy objectives, criteria, and potential alternatives relevant to solving the problem of the loss of open space in Wake County. The next and final section of this paper presents recommendations for protecting open space in Wake County based on this alternatives analysis.

RECOMMENDATIONS AND CONCLUSIONS

This issue paper concludes with recommendations regarding the set of complementary policies and programs that Wake County could implement to protect open space. This concluding section also suggests several implementation strategies that would enhance the potential effectiveness of these tools.

Recommendations

The following table presents my recommendations regarding the set of tools that Wake County could use to protect open space. The recommendations listed in **Table 8** flow from the alternatives analysis presented in the previous section of this paper. Taken together, they address the five policy objectives associated with both the direct and indirect open space protection strategies.

Table 8: Recommendations for Protecting Open Space in Wake County

Solution Component	Action Items	Timeframe
Special Highway Overlay District zoning along highways	Already done by some municipalities. Need to implement along county highway areas. Could include as part of the new Wake County Unified Development Ordinance.	1-2 years
Purchase of development rights program for working lands	Provide adequate funding. Secure a continuing source of funds.	1-10 years
Targeted land acquisition	Need to reassess priorities for acquisition, adding important upland areas in addition to stream corridors/watershed protection.	2-5 years
Prohibit floodplain development	Formalize commitment to prohibit development in floodplain (suggested in WC 2003 plan). Could model after Cary's Flood Damage Prevention Ordinance.	2-5 years
Establish rural historic districts	Assess political feasibility. Could implement as part of the new Wake County Unified Development Ordinance.	3-5 years
Two-rate taxation to promote compact infill development	Implement.	3-5 years
Preferential taxation for working lands	Implement penalty for removal. Tie to Agricultural District Program (preferential rate would be given only to landowners registered in the Ag District).	3-7 years
Wake County Voluntary Agricultural District Program → Agricultural Zoning	Consider strengthening voluntary program to agricultural protection zoning (assess political feasibility).	3-7 years
Conservation Subdivisions	Require all new subdivisions of more than 10 dwelling units to be either cluster or open space subdivisions. Consider raising % of protected open space and allowed density for each category.	3-7 years
Establish county-wide Adequate Public Facilities Ordinance	Continue fostering county-wide water/sewer system. Strengthen Urban Service Area into formal APFO.	5-10 years

Implementation

In order to be successful, a recurring source of funding for open space acquisition must be found, as stated in the 2003 Open Space Plan. Further, this program must be founded on consensus within Wake County government. It should represent a coordinated effort between the Wake County Planning Department, the Soil and Water Commission, the Department of Parks, Recreation, and Open Space, and the Working Lands Task Force. Further, all twelve municipalities must be actively involved in county-wide planning efforts, and these efforts should be continually monitored and reassessed.

In order to promote inter-and intra-jurisdictional cooperation, Wake County should create a new position dedicated to coordinating and monitoring planning efforts throughout the county. This individual would attend key meetings with relevant county and municipal departments, identify program overlaps, facilitate collaborative plan-making, and help the Wake County Geographic Information Systems department track all open space acquisitions. This individual would also be responsible for coordination with TJCOG and other regional conservation organizations. Ideally, there would be more than one person working in this capacity, but funds would likely restrict new staff positions to a maximum of one full-time person.

County and municipal governments would also be well served by making economic arguments for open spaces whenever possible. Planners can begin with Renkown's finding that working lands help subsidize residential land uses in Wake County (2001). More research on the property tax benefits associated with proximity to open spaces could also help conservation efforts in this county.

Items for Further Study

Certain of the potential alternatives listed in the alternatives analysis section of this paper, including transfer of development rights, impact fees, and urban growth boundaries, would likely be useful additions to Wake County's set of open space protection and growth management tools. However, these tools were determined to be politically and/or legally infeasible at this time. After implementing the bulk of the tools proposed here, the county could consider implementing a study to determine the feasibility of applying one or more of these additional tools.

Conclusion

This issue paper has examined the problem of the loss of open space in Wake County. Beginning with a summary of the nature and extent of this problem, this document has analyzed the key laws, policies, regulations, and programs that impact this problem. Following an analysis of potential solutions, relevant policy objectives and criteria for protecting open space in Wake County were presented. My recommendations for action and further study, summarized above, flow from these preceding sections and conclude this issue paper.

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Appendix A: Laws, Policies and Programs relevant to loss of open space in Wake County

Law/Policy/Program	Enacted	Purpose	Relevance for Wake County open space issue
<i>Federal</i>			
Clean Water Act, esp. Section 401	1972	To delegate authority to the states to issue 401 Water Quality Certification for all projects that require a federal permit. The 401 certification is verification by the NC Division of Water Quality that a given project will not degrade “waters of the State” or otherwise violates water quality standards (Cary Preservation Toolbox).	Slows conversion of wetlands, an important type of open space in Wake County
Federal Conservation Funding Sources: Environmental Quality Incentive Program; Farmland Protection Program; Hazardous Mitigation Grant Program; Land and Water Conservation Fund, etc.	Various dates	To provide financial support to states, counties, and local governments for farmland preservation hazard mitigation, and park, wildlife, and open space preservation, among other purposes.	These funds could potentially be helpful in achieving Wake County’s open space goals, but should not be counted on to provide significant, long-term financial support, due to uncertainty of grant provision.
<i>State/Federal</i>			
North Carolina Conservation Reserve Enhancement Program	1999	To provide financial support (federal and state) for installing stream buffers	Participants must own cropland or pastureland along perennial streams—or ditch systems that tie into perennial streams—within the Neuse, Tar, or Chowan river basins or within the Jordan Lake watershed (WC website).
<i>State</i>			
Article XIV, Section 5 of the North Carolina Constitution	1971	To establish acquisition and preservation of park, recreational, and scenic areas as a proper function of government	Enabling legislation for use of public funds in open space protection

Million Acre legislation/initiative, associated One North Carolina Naturally program	Program announced in early 2000, article added to state laws June 2000 ³	To protect one million acres of open space in North Carolina by 2009. One North Carolina Naturally program grew out of this initiative.	Incentives and information for voluntary land preservation (including farmland) and acquisition through easements (NC Million Acre summary). One North Carolina Naturally is attempting to coordinate statewide conservation efforts by region, and to increase public funding for land and water conservation (CEP website). Degree of impact is unclear – million acre goal not actually codified, but may lead to more open space in Wake County through increased funding of statewide trust funds.
Water Supply Watershed Protection Act	1992	To protect water resources through development regulation in designated watershed areas	Requires all local governments having land use jurisdiction within water supply watersheds to adopt and implement water supply watershed protection ordinances, maps, and a management plan. Adopted ordinances must be reviewed by the state (NCDWQ, 2004). Provides rationale for down-zoning in watershed areas.
Farmland Protection Enabling Act	1985	To preserve and protect the state’s agricultural lands	Allowed North Carolina counties to establish Voluntary Agricultural District programs (AFT website).
State Park System	Ongoing	To preserve and protect open spaces for the enjoyment of all North Carolinians	As of 2003, Wake County contained three state owned and operated parks: William B. Umstead, Mitchell Mill, and Hemlock Bluffs, totaling approx. 5600 acres (WC, 2003).
Conservation Trust Funds: Clean Water Management, Natural Heritage Trust, Farmland Preservation, Parks and Restoration	Various dates (1987-1996)	Goals by fund: to combat water pollution; protect ecological diversity and cultural heritage; protect farmland; develop a more extensive parks system. These funds have collectively protected over 282,000 acres in the state as a whole, including over 2,800 acres of farmland (TPL website).	Data on acres protected under these programs in Wake County was not found. These funds could potentially be helpful in achieving Wake County’s open space goals, but should not be counted on to provide the majority of financial support due to uncertainty of grant provision.
Conservation Tax Credit Program	1983	To assist landowners in private land conservation. Credit allowed against income taxes when real property is donated for conservation (NCDENR website).	The Trust for Public Lands reports that between 1983 and 2003, 68,500 acres of land in North Carolina was protected under this program (TPL website). The North Carolina Dept of Environment and Natural Resources reported that 50 properties in Wake County participated in the program between 1983 and 2003 (NCDENR website).

³ S.B. 1328/H.B. 1633; enacted June 28, 2000.

<i>Regional</i>			
Triangle Greenprint (TJCOG, Triangle Land Conservancy, NCDENR)	Ongoing	To support regional conservation through development and implementation of a conservation action plan supported by a GIS open space tracking system	Wake is one of seven counties included in the Triangle Greenprint process.
Land acquisition by nonprofit conservation groups	Ongoing	To preserve and protect open spaces in the Triangle; focus on environmental services of open space and connectivity of protected lands	Nonprofits including the Triangle Land Conservancy are actively pursuing easements, development rights, and fee simple land purchases throughout the region.
<i>County</i>			
Wake County Park System	Ongoing	To preserve and protect Wake County open spaces, primarily for recreational use	As of 2003, the county owned and managed over 1200 acres of parks, with several hundred more acres planned for future acquisition (WC, 2003).
Wake County Planning Department: Subdivision Ordinance	Updated January 2005	To regulate development through specification of procedures and standards for dividing a parcel of land into lots suitable for development	Sets review standards for cluster (>10% permanently preserved open space) and open space (>30% permanently preserved open space) subdivisions, with special requirements for water supply watershed areas
Wake County Planning Department: Land Use Plan	1997(?), updated 2003	To guide growth in Wake County according to goals and objectives developed by a 28-member task force	County-wide land use plan influences development pattern and sets goals and tools for open space conservation
Wake County Working Lands Programs	1989	To maintain the county's agricultural lands	Per Wake County website, program includes: voluntary purchase of development rights program, preferential taxation program, education for farmland estate planning. Working Lands Task Force (associated with Dept of Parks, Recreation and Open Space) is currently meeting monthly to try to clearly define program objectives (WC website).
Wake County Voluntary Agricultural District Program	2002	To maintain the county's agricultural lands	Ordinance providing for the voluntary preservation of farmland from non-farm development. Protected 13 farms in Wake County totaling 2004 acres as of May 2004 (Upton et al, 2004).
Wake County Open Space Plan	2003	To permanently protect at least 30% of Wake County lands as open space	Sets priorities for open space acquisition and methods for program implementation.
Wake County Watershed Master Plan	2000	To protect and restore county streams (WC, 2003).	Protection of watercourses is one of the most important open space goals for Wake County.
<i>Municipal</i>			
Open Space Plan for each municipality	Pre-2003	To allow each municipality to set its own open space goals and implementation plan.	12 town plans were incorporated into Wake County Open Space plan.