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16. Abstract

A fundamental public policy decision implicitly addressed by agencies responsible for urban transportation planning is the right of the individual versus the goal of the community. This question arises in considering the role that state and local officials should play within the context of transportation and land development, specifically the "smart growth" movement. Although there is no universally accepted definition of "smart growth", discrete actions being implemented or advocated under that rubric reveal that smart growth is viewed as a range of regulatory, financial, and educational practices that may help to coordinate transportation and land use through integrated planning. Practices helpful in this coordination include communications, consensus building, and legislative efforts that improve the dialogue, reduce polarization, and enable coordination of transportation and land use decisions. None of these practices requires the use of the "smart growth" label; instead, they expose tangible initiatives that can be publicly debated. Only when referring to specific initiatives (rather than the general slogan "smart growth") is it fair to ask a community or an organization to take a position on the issue of individual autonomy versus communal desires. This paper discusses critical policy issues facing agencies responsible for land use planning, reviews organizational approaches to resolving smart growth issues, and suggests practices to enhance community participation.

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TECHNICAL ASSISTANCE REPORT

APPROACHING THE "SMART GROWTH" ISSUE: A LOOK AT BEST PRACTICES USED BY TRANSPORTATION PLANNING ORGANIZATIONS

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EXECUTIVE SUMMARY

Does This Paper Endorse or Refute "Smart Growth"?

Neither. Unfortunately, as with any slogan, one may use the phrase "smart growth" to achieve an unstated goal, such as stopping growth in a particular area or thwarting particular transportation system improvements. Alternatively, one may earnestly use smart growth as an agenda to design a better integrated transportation/land use system. Without knowing the specific techniques being considered, one cannot distinguish between these two viewpoints. *There is no universally accepted definition of "smart growth."*

Readers may wonder whether this paper is a tacit endorsement of the smart growth bandwagon. It is not. Although the variety of organizations mentioned herein have their own definitions of smart growth, for the purposes of the transportation or land use professional, the following definition seems adequate: *Smart growth is a range of regulatory, financial, and educational practices that may help to coordinate transportation and land use through integrated planning.* This paper *does* advocate techniques that are helpful in this coordination, as outlined in nine "best practices" illustrated throughout the text. None of these techniques requires use of the smart growth label. Instead, they expose specific measures—zoning, funding, and educational—that can be publicly debated. It is only at the specific level, and not at the general rhetorical level, that it is fair to ask a community or an organization to take a position.

Overview

"Smart growth" has garnered much attention in the media as an instrument that can improve quality of life as well as make transportation more effective and manageable. Yet it is also the subject of controversy. Some stakeholders proclaim that smart growth essentially consists of government-sponsored restrictions on the market and the way citizens choose to live. For entities charged with managing a transportation planning process required by TEA-21 to have diverse stakeholder input, synthesizing differing views into a coherent transportation policy is a challenge. This paper attempts to respond to this challenge by (1) defining smart growth and identifying instances when it has inspired controversy, (2) determining how other entities are resolving disagreements among competing interests to move the planning process forward, and (3) identifying which of these practices may be helpful in Virginia. To achieve these objectives, descriptions were pulled from available sources to synthesize a definition of smart growth, and representatives of selected planning entities and stakeholders were contacted by telephone to gain their insights into the smart growth issue.

Just What Is Meant by "Smart Growth" and Why Is It Controversial?

The slogan "smart growth" has a universal appeal—since no one advocates "dumb growth." Smart growth can be described as a collection of regulatory, funding, and educational techniques designed to lead to a better integration of transportation and land use through planning. *Regulatory* changes can be restrictive, but not necessarily so when compared to

current ordinances. Regulatory techniques by their very nature are restrictive. However, some smart growth initiatives offer relaxation of regulatory regimens so as to allow previously prohibited practices. Restrictive techniques can include revising zoning requirements that mandate higher density housing and architectural standards. More flexible techniques can include giving developers the right to offer more compact housing on one parcel in exchange for preserving green space on another, permitting a mix of land uses, or simply removing minimum density requirements. *Funding* initiatives consist largely of providing additional subsidies or redirecting funds to guide desired development patterns. An example is steering transportation funds toward areas that attain a specified minimum density. *Educational* techniques concern creating a blueprint for growth with which all interested parties can agree.

Some of these techniques, such as the education of citizens, coordination between transportation agencies and zoning boards, or widespread dissemination of a consistent, community-based comprehensive plan, appear to be benign. Others, such as the channeling of resources to high-density areas, can potentially have winners and losers, especially from the perspective of residents in such locations who may not want an increase in density. On the other hand, it has been suggested that if citizens do not desire an urban growth boundary, then inclusion of such as a regulatory technique is not really "smart." The point of view expressed in this paper is that a transportation planning entity can serve the public interest by avoiding the popular sounding label "smart growth" while adopting select practices that meet the spirit of TEA-21 and give the community a voice in developing a transportation system that meets its needs.

What Approaches Have Been Taken to Address the Issue of Smart Growth?

The response of selected state transportation agencies and advocacy groups to the smart growth issue exemplifies practices that make the necessary debate more productive. For example, Maryland and Georgia place transportation and land use decisions within a single entity, whereas Florida outlines a specific relationship between entities representing these two areas. In addition, advocacy groups, such as the National Association of Home Builders, the Surface Transportation Policy Project, and the Urban Land Institute, also use practices to improve the quality of the debate by expanding its bounds and promoting the exchange of useful ideas. This paper identifies nine practices that Virginia may wish to consider to move the planning process forward so that plans can be developed, debated, modified, and implemented. The rationale behind these practices is detailed in the paper.

Nine Practices Virginia May Wish to Consider to Move the Transportation Planning Process Forward

These practices do not constitute concrete recommendations, they are not necessarily novel to Virginia's current planning process, and many of them may be applied by both state and regional planning agencies. The first seven can be used within VDOT's existing organizational

framework, although practice 7 will require more VDOT staff time to work with local governments. Practices 8 and 9 would necessitate legislative action.

1. *Clarify definitions*. Because the term "smart growth" is so vague, and can mean different things to different interests, *planning policy should avoid use of the term and instead cite the explicit techniques under consideration.* For example, if a region decides it wants to institute an urban growth boundary, it should simply state this decision in the appropriate planning documents. If a region views an urban growth boundary as an intrusion on free market principles, then that should be stated. If a state decides to encourage growth in particular locations and discourage it in others by adjusting the funding for transportation improvements, these funding policies should be clearly outlined. In all three cases, use of the term "smart growth" would only add confusion.

2. *Focus on the facts rather than rhetoric*. Although Maryland has adopted smart growth within its political structure, a report by a diverse group of stakeholders deserves merit for pointing out that even full implementation of all recommended planning and transportation strategies will not reduce congestion below current levels but instead may only prevent congestion from becoming worse. A North Carolina study found that limited implementation of some techniques associated with the smart growth label would be beneficial but that full-scale implementation would be intolerable for one specific geographical region where higher densities would generate additional vehicular traffic that could not be accommodated by the transportation infrastructure.

3. *Identify which areas are under government control and which branch of government does what.* Citizens do not always know who controls roads in incorporated cities, interstate highways throughout the state, zoning at the county level, or certification of compliance with environmental regulations.

4. *Clearly identify and prioritize areas that require further research*. There are several unanswered questions pertaining to land use and transportation relationships, such as the extent to which costs for transportation services vary depending on land use configurations. Questions that require further research or a review of the literature should be acknowledged.

5. *Promote an accessible master development plan.* New Jersey, for example, graphically portrays expected development densities for different portions of the state and posts the maps on the World Wide Web. Encouraging localities to create consistent, open, long-range, high-quality plans would be helpful in this regard. As noted in the text, GIS and modeling technologies merit investigation for accomplishing this practice.

6. *Explicitly state the views of local governments when incorporating regional plans into the decision-making process.* MPOs may have specific views on certain controversial issues over which the state has authority, such as placement of toll

facilities on interstates to generate funding for local transportation projects. These views should be articulated in regional plans, whether or not they are implemented. Because TEA-21 gives MPOs certain authority, they should also be given some responsibility for input into the harder decisions.

7. *Work with localities and MPOs to develop an effective mix of zoning requirements and incentives.* Zoning is resolved at the local level. If, however, VDOT becomes aware of types of zoning that may affect the efficiency of the transportation system in a particular instance, then VDOT should at least convey this knowledge to local officials. Implementation of this practice will require additional VDOT staff.

8. *Consider legislation that places transportation and zoning decisions within the same entity*. Maryland and Georgia, for example, took steps to create a body that has authority over both. Such legislation would not have to apply statewide. Further study is required to determine whether such a body would be feasible and effective in Virginia.

9. *Share planning responsibilities with other entities.* In Florida, for example, recent legislation gives FDOT a role in providing technical assistance to localities. In practice, FDOT provides this analysis when so requested by the Florida Department of Community Affairs. This linkage appears to place FDOT in the role of being a more objective source of information, analysis, and transportation project implementation. In another instance, a blue-ribbon panel in suburban Maryland brought opposing views to a debate that resulted in a high-quality transportation plan. Even without legislation, an expert panel of diverse, respected stakeholders can be a valuable resource. Although zoning decisions are made at the county and city level, Virginia does have several agencies that can influence or have a stake in local land use planning such as VDOT, the Department of Housing and Community Development, the Department of Conservation and Recreation, and even the Department of Taxation (for one particular program). Implementation of this practice would require further study of the roles and responsibilities of these agencies to determine the feasibility and efficacy of such sharing in Virginia.

Although such techniques can lead to better planning, the public needs to know the limitations of these practices. Unfortunately, for example, even the most aggressive attempts to reduce VMT growth through better planning and operations will not improve congestion beyond its present state in some cases. Instead, these improvements may prevent congestion from growing worse. Given that most of the smart growth practices entail tradeoffs, communities need to provide some input into the process. For example, the technique of having an urban growth boundary offers a potential benefit (the preservation of green space in an otherwise suburban area) and a potential drawback (higher home prices and/or smaller lot sizes). The technique of coordinating transportation and land use implies a possible benefit (explicit consideration of the impacts each will have on the other) yet may induce an additional cost in terms of the extra effort required to enable entities to make decisions in coordination rather than in isolation.

Further, it appears that some research questions remain unanswered or are not well understood, such as the relationship between density and VMT per person outside very-high-density areas. Finding the answers to these questions can also make the public debate more productive. In this regard, an entity responsible for planning can work to make facts available *and* to provide analysis that responds to some of the questions outlined in practice 4.

Finally, and most important, the response of select organizations to the smart growth issue does offer insights into improving the planning process. The examples of Florida, Maryland, and Georgia, noted in practices 8 and 9, illustrate how sharing or transferring transportation planning authority can potentially bring about explicit integration of transportation and land use decisions, along with the tradeoffs these decisions will entail. Because these initiatives are relatively new, they should be monitored for implementation lessons that Virginia can use.

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INTRODUCTION

The U.S. General Accounting Office contends that although many factors are thought to contribute to the increase in low-density suburban housing since World War II, direct causality has been difficult or impossible to establish because of the multiplicity of such factors, including rising incomes that encouraged larger homes and lots, low-density zoning regulations, desegregation, improvements in farm production, better communications technologies, smaller family size, and discounts for home ownership.[1] This is also the case with regard to the complex, dynamic relationship between transportation and land use. For example, does the movement to the suburbs cause investments in increased highway capacity? Or does increased highway capacity cause more movement to the suburbs? Does compact development cause greater bicycle and pedestrian travel with a corresponding reduction in automobile usage?

Complicating these questions is the relatively slow response of land use changes to external stimuli. As an example, the Transportation Research Board suggests that, according to land use models, development patterns are probably fixed for at least the next 20 years.[2] Yet a minority statement in the same report points out that the land use models leading to that finding were based on a comparatively short horizon of only 5 years in which an abnormal real estate market existed. Hence, it is not even certain what the planning horizon should be for these land use changes.

In addition to such unresolved causal questions, several policy issues arise. The most controversial is the balance between the rights of a property owner and the desires of a majority in a community to influence permissible property uses.

In response to controversies regarding the "best" system of coordinating transportation and land use, the federal transportation authorizations of the 1990s (the 1991 Intermodal Surface Transportation Efficiency Act, or ISTEA, and the 1998 Transportation Equity Act for the 21st Century, or TEA-21) outline a process for involving local governments and private citizens in the development of a state's transportation plan. Although they do not specify steps that must be followed, the federal regulations clearly place an emphasis on a flexible, living plan based

heavily on the opinions of those with a vested interest in the transportation system, including citizens, local governments, businesses, and advocacy groups. In addition, with the exception of funds allocated to named projects, specific planning policy is not mandated. Inclusion of multiple stakeholders in the planning process, therefore, is a clear goal of ISTEA and TEA-21, even though the legislation does not specify what should transpire.

In the media and public opinion, the topic of "smart growth" has attracted attention as a means of improving the coordination of transportation and land use planning. Yet long before the smart growth nomenclature became prevalent in the mid to late 1990s, the public knew that transportation and land development affected the fundamental character of their community. "Urban renewal" projects in the 1950s, for example, were touted as a solution to keeping middle class citizens from moving to the suburbs, although critics note they often destroyed rather than renewed communities.[3] In addition to economic impacts, citizens have recognized transportation and land use coordination as an instrument to address a host of social issues. Tellingly, the 1962 transportation report developed for President Kennedy entitled *Comprehensive Planning for Metropolitan Development* noted that one of the principal goals of government involvement in transportation policy was "the achievement of sound land-use patterns."[4] In fact, the 3C planning process, introduced and revised in 1963 and 1967, formally included both transportation and land use components within its 10 elements; the last element specifically noted "social and community-value factors," including the "preservation of open space." Given that transportation and land development have historically been viewed as fundamental to the quality of life, the fact that the topic of smart growth has attracted media attention as a means of improving the coordination of transportation and land use planning should not be surprising.

A recent newspaper article by Steve Twomey in *The Washington Post* suggests that the debate over whether citizens should try to influence growth patterns can reflect differences in philosophy that are hard to critique.[5] On the one hand, the National Trust for Historic Preservation sees the need to find "a saner way to grow" in order, among other goals, to preserve a sense of community. On the other hand, the writer points out that an article in the *New Republic* reminds us that "detached homes, verdant lawns," and other characteristics associated with the suburbs are what citizens desire, even if pursuing these objectives leads to sprawl. At a glance, it is difficult to find fault with either philosophy: working to preserve a sense of community versus working to give citizens choices.

APPROACHING THE "SMART GROWTH" ISSUE

For entities charged with ensuring, as required by TEA-21, that transportation planning has diverse stakeholder input, synthesizing differing views into a coherent transportation policy is a challenge. This paper attempts to respond to this challenge by exploring the meaning of "smart growth" as interpreted by different stakeholders, identifying initiatives that planning agencies and advocacy groups have undertaken to coordinate transportation and land use planning, and outlining several practices that a planning organization such as VDOT may wish to consider in order to move the transportation planning process forward such that plans are developed, debated, modified, and implemented. Specifically, five questions were asked:

1. What is “smart growth”?

2. Why does smart growth provoke disagreement?

3. How do transportation agencies achieve consensus or resolve discord when responding to or implementing smart growth proposals or initiatives?

4. What practices can be used to encourage community participation yet move transportation plans forward?

5. What can a transportation agency do to implement the best transportation planning practices that are included under the “smart growth” umbrella?

Three broad tasks were employed to produce this report:

1. Descriptions were pulled from available sources to synthesize a definition of “smart growth” that also explains why it can be controversial.

2. Representatives of state DOTs, advocacy groups, and recently formed planning authorities were contacted by telephone to discern some of the undocumented but critical aspects of recent smart growth practices. Interviewees were asked how organizations responsible for transportation planning can achieve consensus or resolve discord when implementing smart growth practices. Key topics were:

   - What actions have you taken to move projects forward?

   - What do you view as the role of a state or city transportation authority?

   - What changes to the planning process will result or are needed?

   The questions were not the same for all organizations, since each organization has a different focal point with respect to smart growth. Instead, the discussion centered on the organization’s or representative’s viewpoint with respect to smart growth.

3. Planning practices employed by selected agencies and groups that can potentially be useful in Virginia were identified. The rationale for selecting the practices was to look for objective methods that appear to increase involvement in the planning process, improve the quality of the debate, and move the process forward to develop, debate, modify, and implement plans for transportation improvements.

WHAT IS SMART GROWTH?

Background

Although there is no single definition of "smart growth," common themes can be found among proponents. Generally, supporters believe smart growth should reduce urban sprawl through better land use and transportation planning.[6] The term "urban sprawl" is also defined vaguely, usually with descriptors: low density, served only by the automobile, occurring on the fringe of urban areas at the expense of farmland or unused space, random or unplanned development, and a weak mix of land uses.

At a very broad level, it is difficult to find terminology that one would find objectionable when reviewing either the broadly stated goals or the specific techniques of smart growth as suggested by several organizations. For example, representatives of the Smart Growth Network, a cooperative venture coordinated by the U.S. Environmental Protection Agency and encompassing several partners including the National Association of Counties, the State of Maryland, and the National Trust for Historic Preservation, define smart growth as "an approach to [metropolitan] development that serves the economy, community, and environment."[7] The National Association of Home Builders notes that smart growth means "meeting the underlying demand for housing created by an ever-increasing population and prosperous economy by building a political consensus and employing market-sensitive and innovative land use planning concepts."[8] The City of Austin, Texas, notes that smart growth is "an effort to reshape urban and suburban growth to enhance our communities, strengthen the economy, and protect the environment."[9] The Surface Transportation Policy Project and the National Resources Defense Council jointly indicate smart growth as being "compact, walkable, and transit accessible," making it an antidote for suburban sprawl.[10]

The specific examples of smart growth given by diverse organizations are also overlapping, such as the goal of coordinated planning with input from the public. Supplemental goals of providing multiple transportation and housing choices, providing green space to make communities attractive, using mixed-use development, and even using infill strategies (new construction within the urban core of cities and the inner suburbs) are generally supported by different organizations. Some advocates further include streets and highways more amenable to pedestrians and bicyclists, active planning for transit, and attempts to locate traffic generators (homes, employment sites, and commercial centers) within walking distance of one another. In fact, there are few or no definitions of smart growth that include techniques that in themselves could not be included in another organization's definition of smart growth. *Perhaps the distinguishing feature among the various definitions of "smart growth" is emphasis rather than categorical meanings. The varying definitions give insight into aspects of growth that each organization views as being the most essential.*

Many of the organizations with a position on smart growth—such as the National Association of Home Builders and the Urban Land Institute—use the World Wide Web to publicize their views. The Smart Growth Network, for example, maintains a web site that posts letters (positive and negative) and disseminates responses. The Road Information Program maintains a web site that opposes smart growth.

The Range of Smart Growth Practices and Initiatives

Generally, smart growth practices can be divided into three related categories: regulatory, funding, and education. Given that transportation and land use are recognized as elements that affect the quality of life, many of these practices have been attempted in the past under another heading or program.

Regulatory Initiatives

Regulatory techniques are often implemented at the local level and generally address zoning, in terms of density, type, mixture, or impact fees. Well known is the urban growth boundary of Portland, Oregon, which since 1979 has existed to keep new development inward. A three-county entity known as Metro handles planning decisions, including responding to increasing requests for expansion of the growth boundary.[11] Zoning initiatives can also affect the type of new development permitted. For example, Contra Costa County in California has tried to increase densities at transit stations, although residents now object to the increased density limits.[23] The county also has a referendum placing responsibility on future governments to approve only new developments that will not decrease measures of services, such as the number of police per citizen.[12]

Not all regulatory changes are restrictive when compared to the current state of the practice for zoning ordinances. To encourage growth within the urban core, Maryland offers reduced environmental liability for developers of brownfield sites in urban areas as compared to the liability developers at the same sites would have faced in the past. To reduce litigation, local governments in Utah can enact procedures where landowners who feel that zoning regulations lessen the value of their property can present their case to local officials before going to court.[13] Although not using the term "smart growth," Levine suggests that some of the land uses that planners desire (transit-oriented, mixed-development, and higher density) can result from less government regulation than is the status quo, not more.[14] Specifically, he notes that certain types of construction that are nicknamed "sprawl," such as low-density residential homes with no commercial venues and employment centers nearby, are a result of local zoning ordinances that do not permit alternative scenarios. For example, instead of steadfastly requiring all development to be below a specified density, one could allow a tract to have higher density houses on one portion if the developer agreed to preserve green space on another portion. The lesson is that local government should not try to dictate specific land uses per se but instead should provide a framework for developers to provide a mix of market-driven alternatives.

Perhaps one of the clearest descriptors comes from a handbook by the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development regarding changes necessary to land use codes to encourage smart growth.[15] Although key principles are outlined (efficient land use; full utilization of urban services; mix of uses; transportation options; and detailed, human-scale design), the changes to zoning ordinance may be summarized by regulatory function. The main thrust of the regulations is to give zoning boards flexibility to achieve desired development patterns. These changes include:

- *compact development*, such as minimum average densities, reduced setback requirements, reduction of minimum lot sizes, removal of minimum parking requirements, and flexibility to make "infill" development attractive to developers

- *mixed land uses,* such as attached and detached homes in the same neighborhood, mixed-use buildings, retail and industrial buildings in the same zone, and commercial and residential buildings in the same zone

- *encouragement of non-automobile transportation,* such as narrower streets, sidewalk standards, higher densities near transit, and fewer cul-de-sacs for bicycle connectivity

- *"human-scaled" design*, such as orientation of buildings and parking lots to cater to pedestrians, lighting, and architectural improvements, from better building transitions to amenities (porches, aesthetically pleasing building fronts, etc.)

Regulations can also be a mixture of specifications and incentives. For example, one might reward developers with a permitted higher density if they will provide additional amenities, rather than requiring an exact type of design for all new construction.

Funding Initiatives

Providing additional funding for citizens, employers, and associations to influence development in ways desired by the state is a large part of many smart growth programs. Maryland offers a Live Near Your Work Program, where an employer, local government, and state government each contribute $1,000 to employees who purchase a home near their work site in a designated area and reside there for 3 years.[16] The City of Austin, Texas, offers reduced fees to developers whose projects rate high against an "incentives matrix" composed of criteria such as being within two blocks of a transit station, providing tables and chairs for a pedestrian-oriented environment, not having drive-through traffic, and providing an increase in the tax base.

Programs that appeal to communities include Main Street Maryland, which provides competitive grants to communities that seek to revitalize their downtown districts, with an emphasis on four actions: building consensus among business, real estate, and preservation groups; marketing the new downtown area; improving aesthetics through architectural design changes; and making downtown merchants more competitive. Maryland's Neighborhood Partnership Program provides for grants to nonprofit organizations that will help redevelop downtown areas.[17]

To encourage urban areas to attract growth and reduce development in rural areas, Washington State has proposed legislation that would tie transportation funds to the number of new homes built in cities.[18]

Education Initiatives

Educational efforts include the formation of professional groups such as the Maryland Downtown Development Association. The City of Menlo Park (California) and the City of Helena (Montana) use "visioning" to ask citizens how they want their community to grow.[19] Citizens are shown pictures of various alternatives and asked to rate them. Presumably, an agency would then look at incentives and regulations that would help achieve the desired type of community. Although newer technologies are making visualization easier, the concept of asking citizens in towns and cities to meet to decide how their communities will grow is not new. Colorado began a series of town meetings in 1995 for that purpose.[20]

In a broader sense, coordination across jurisdictions to create a plan that citizens, developers, and government officials can all understand is a key component of education. The plan can go beyond specifications (e.g., require a minimum amount of open space) to provide a comprehensive vision for how the geographic elements of a region will work together.[15] The New Jersey State Development and Redevelopment Plan, for example, outlines the role of different types of geographical areas, such as urban centers, open space, and towns, and gives each expected population and employment densities.[21] Electronic maps highlight the location of these centers.

Two aspects of the plan's development should interest VDOT. First, the plan's development illustrates how one can involve communities that may be hard to reach. To encourage their participation, urban centers were given grants of $15,000 to help create this later version, since it was argued that their views had not been adequately represented in the prior version. Second, the plan illustrates that one must balance flexibility and consistency over time in the creation of a master plan. The plan underwent one major revision since it was initially created in 1992. During the elapsed period, some demographics changed; e.g., the proportions of the elderly and school age children increased. Logically, it appears that one must trade off the desire for a plan that is consistent over time with the fact that trends can change from what was originally expected.

WHEN DOES SMART GROWTH PROVOKE DISAGREEMENT?

The site for the smart growth debate is at the level of specific issues rather than broad goals. Being affiliated with controversy does not mean that a particular measure is "bad" or "good"; instead, this knowledge enables administrators to have realistic expectations for how different constituencies may view these measures. Several potential conflict points have already risen:

- the constitution of smart growth
- the implementation of specific programs
- the determination of jurisdictional control

- the impacts of specific policies on travel and land use decisions
- the use of isolated statistics or anecdotes to support a particular position.

Constitution of Smart Growth

Many organizations agree that communities should be offered a variety of choices as to how growth should occur. Disagreement can arise, however, when choices become requirements, through either outright specification or diversion of resources. The Road Information Program argues that smart growth techniques have especially negative impacts on the poor because they limit individual choices. The program states that smart growth techniques such as "urban growth boundaries, increased urban density, limits on road expansion, and increased public transit, with an emphasis on rail transit" are tactics that primarily affect the poor.[22]

There is also some disagreement as to the desired goals of smart growth. Although reducing urban sprawl is often cited as the main goal, other purposes have been offered such as providing consumers with greater choices, making housing affordable, reducing automobile travel rates, reducing total congestion, and improving land use and transportation planning. Although these goals are not necessarily mutually exclusive, they are not always viewed with the same importance. One's perspective on "smart growth" is affected by the degree of control one expects to have on a community's population growth.

For example, if one expects that a community will grow to a particular level, say 100,000 people, no matter what, then one may be interested in techniques that will reduce the amount of vehicle miles traveled (VMT) *per person,* even if such techniques require an increase in density. On the other hand, if one expects that population growth *can* be controlled in the community, say to 50,000 rather than 100,000, then it is quite possible that citizens might elect to control VMT by controlling population. In short, VMT is primarily affected by population. This is the reason for the second, and often popular, view. *Yet for a given population,* it has been suggested that one can *moderately* reduce the VMT by implementing some "smart growth" tactics, such a compact density and a mix of land uses. This is the reason for the first view.

Implementation of Specific Programs

The Urban Land Institute outlines transportation-related smart growth initiatives in Washington State, New Jersey, and Contra Costa County in California that were debated in part because their implementation coincided with periods of economic decline.[23] Washington State's Growth Management Act requires developers to ensure that new development will meet roadway level of service (LOS) criteria within 6 years. Yet certain developments were rejected by local authorities because the capacity expansion (e.g., three left-turning lanes) did not mesh well with the intent of the comprehensive plan. New Jersey notes difficulties in coordinating state and local planning efforts, as localities make all planning decisions and no area of the state is unincorporated. New home buyers in the growing portion of Contra Costa County pay an

additional $5,000 per house (assuming this cost is passed on by developers to consumers), which will fund, in part, an HOV lane, a four-lane addition to a state highway, and a new heavy rail transit line. This regulation was not designed to stop "sprawl" but instead to ensure that new growth could be paid for, suggesting the need to tie smart growth initiatives closely with specific outcomes.

Determination of Jurisdictional Control

The issue of smart growth involves local, state, and national politics. The Loudoun County Democratic Committee, for example, rates county supervisors on how they vote on specific measures, such as zoning changes (higher or lower density, change of use), whether developers are required to pay fees to help with schools, and the establishment of criteria enabling the county to limit the number of residential building permits.[24] At the federal level, federal agencies that influence transportation policy vary in the attention they devote to the smart growth initiative on their web sites. Such agencies include the Environmental Protection Agency, the Federal Highway Administration, and the Federal Transit Administration. Even among persons who favor some type of growth management, there exists a sentiment that such management should be at the local level with minimal or no federal involvement.[25] The emphasis in this viewpoint is that communities should be empowered to make their own growth decisions rather than giving this decision-making power to the state government. Smart growth is viewed by some as an unwarranted intrusion of government into the lives of individuals. In his *Newsweek* column, George Will notes that its purpose is to "prevent the masses, in their freedom, from producing democracy's byproducts—untidiness and even vulgarity."[26]

"Control" has also been used to reduce conflict. Maryland's governor suggests that he was able to get the legislature to pass a law directing state road funding primarily to "urban" localities that meet an average density of at least 3.5 dwelling units per acre in part because of how the law was written.[27] In that instance, the law leaves most of the growth decisions up to counties; they designate areas within their borders where growth will be at 3.5 dwelling units per acre and then state funds are targeted to those urban areas. Thus, although a law is set at the state level outlining requirements, it is still the county that decides where these urban areas should be located.

Impacts of Specific Policies on Travel and Land Use Decisions

Disagreement also arises from seemingly contradictory studies in the literature. One example is the debate about whether extra roadway capacity induces additional travel. Another discussion concerns whether higher density development will reduce the automobile trips generated per person. Steiner tackled this question through a review of more than 50 articles and noted that aggregate data did suggest fewer automobile trips for residents of higher density areas. Yet she concludes that the question was not answered by existing research because density had quite possibly been a surrogate for other factors such as income, household size, and land use mix.[28] Cervero points out a key difference between statistical significance and meaningful

impact: compact density can be proven to reduce automobile trip rates when other factors are controlled, but this reduction is marginal.[29]

Although high-density development in proximity to transit stations is often suggested as one way to reduce automobile travel, the experience of the Toronto commuter rail system showed that passenger demand was affected more by the quality of the non-rail portion of the trip than by the residential density near the station.[30] The Transportation Research Board writes that compact development can have a "significant" impact on travel demand but qualifies this statement by explaining that local conditions and the long-time horizon can make these impacts hard to generalize or observe.[31]

A contentious issue concerning urban growth boundaries is their impact on the availability of affordable housing. In the well-known example of Portland, Oregon, a 1992 study cited in a recent examination of Portland's housing prices indicated that the urban growth boundary, immediately following its adoption in 1979 and in conjunction with zoning, sewer, and access to the central business district, "had had a significant effect on land prices."[32] Land prices increased, as one would expect with an urban growth boundary. If the supply of a good is limited without a change in its demand, the market will raise prices of that good, causing buyers to acquire less of it. Dunphy implies that the challenge is to balance the problem addressed by an urban growth boundary (urban sprawl) and its negative side effects (a decrease in or lack of affordable housing). Dunphy writes: "There obviously is considerable support for limiting sprawl and increasing densities in order to preserve the region's [Portland's] quality of life. . . . At the same time, there seems to be an understanding that insensitive controls on available land development could contribute to pushing housing costs beyond the range of many people, a consequence that is unacceptable. Striking the right balance requires careful execution."[32] Using an urban growth boundary is one technique that many persons place under the label smart growth, and, as with any other such technique, a community can elect to adopt it or not.

The Use of Isolated Statistics or Anecdotes to Support a Particular Position

Because the topic of smart growth is so open ended, a variety of viewpoints can be supported by the selection of an isolated statistic or anecdote. A critical aspect of any transportation debate is that a single generalization adds to the confusion rather than improving the quality of the discussion. *For example, an opponent of smart growth could pick a controversial technique—say an urban growth boundary—and use that single example to portray all smart growth initiatives as amounting to an increase in government intervention. On the other hand, a proponent of smart growth could pick a popular technique—say increased transportation and land use coordination—and use it to portray all smart growth initiatives as beneficial to all stakeholders.*

The same applies to numerical data. Opponents of land development might state that "we are currently developing 100 acres per hour." Proponents could state that "it will take a century to develop another 5 percent of the continental U.S." These two statements are equivalent as shown in the Appendix, but they evoke a very different image of the rate of growth of

development. Statistics and anecdotes, thus, should be placed in a real context with a specific question that needs to be addressed.

HOW DO TRANSPORTATION AGENCIES ACHIEVE CONSENSUS OR RESOLVE DISCORD WHEN IMPLEMENTING SMART GROWTH PRACTICES?

Responses to the telephone survey suggest pitfalls and solutions of which VDOT should be aware. A couple of persons interviewed suggested that their responses may not be indicative of the entire organization; hence, the value of this section is the insights into improving the planning process that can be gleaned rather than a delineation of a formal position maintained by these organizations.

Georgia Regional Transportation Authority

The GRTA is a new transportation entity that has responsibility for urban areas in Georgia that do not meet air quality standards; currently, the GRTA is focused on the metropolitan Atlanta region. came into existence (as a result of legislation supported by the governor) around June 1999, so many of these views reflect intentions rather than experiences. The GRTA has explicit authority to make changes to the Transportation Improvement Plan (TIP), to veto projects proposed by GDOT, and to implement other transportation projects not proposed by GDOT. In spite of this authority, however, the GRTA does not intend to become a project sponsor. Instead, it aims to set standards for new development by favoring land use projects where developers have considered congestion-reduction techniques such as reducing single-occupant vehicle travel, mixing land uses such that origins and destinations will tend to be closer, and making transit projects more sustainable. A second item of interest is the power to designate local governments as "cooperating." Localities that fail to meet this classification would not be eligible for state or federal transportation funds. In both instances, the GRTA coordinates the planning process with the MPO.

The GRTA's desire to encourage a pattern of growth that will result in transportation demand that is easier to accommodate is not uncommon. What sets the GRTA apart from VDOT, however, is the explicit integration of transportation and land use and an institutional means of coordinating the planning efforts of local governments. However, even states without the organizational structure of the GRTA can influence land use decisions through the permitting process associated with access management decisions.

Florida Department of Transportation

FDOT approaches the transportation planning process in a way that places more analytical, but less political, responsibility on FDOT. Florida has a "concurrency statute" as part of its state regulations that essentially enables localities to permit development only if it will not decrease roadway LOS beyond a specified minimum threshold. The minimum threshold is

determined by the local government and reflects community values: LOS D may be common, but the community can set its own LOS. Localities initially design a comprehensive plan with a transportation element, which they submit to the Florida Department of Community Affairs (DCA), which in turn relies on FDOT to analyze the transportation element. The transportation element contains goals, objectives, and policies to be used in the development of the community's long-term transportation system plan. The locality then uses the comprehensive plan to guide development, and local governments are expected to use "professionally accepted techniques" to measure LOS for automobiles and other modes.

Over time, prospective developers submit plans to the locality as potential projects become feasible. If the roadway level of service decreases below the adopted LOS, any citizen, or the DCA, can theoretically request an administrative hearing on development, which can initiate a more formal process where future development is restricted until the locality, the DCA (which can ask FDOT for analytical assistance), and the requesting developer can improve the LOS to an acceptable level. The locality is not expected to grant the development permit under the status quo. In practice, however, because the process can become quite time-consuming and expensive for all parties involved, the locality, the DCA, and interested parties prefer to get together to work out a solution that addresses the citizen's or the DCA's concerns before such a hearing becomes necessary.

In this scenario, the DCA administers the statewide growth management statute followed by the localities. In effect, therefore, citizens' groups that perceive that a locality is permitting development without ensuring that the transportation system can meet the adopted LOS may contact the DCA directly. The DCA then calls on FDOT to provide technical assistance in the analysis of the impacts on transportation. In short, FDOT does not approve development per se but is relied on as a technical resource for analysis.

If an adopted roadway LOS is not being met, counties or cities that are so inclined may elect to become a "multimodal district," where the criteria for granting development permits hinge on a broader set of transportation performance measures than roadway LOS, such as transit and pedestrian indices. In this case, developments must meet several "smart growth" criteria specified within a community's comprehensive plan, such as mixed-use development, urban infill development, and neighborhood revitalization.

Realistically, this process is not perfect: political considerations still play a role in how the process is implemented. An advantage of the concurrency statute, however, is that serious discussion (among FDOT, the DCA, and the affected localities) about planning efforts seems to begin earlier than might otherwise occur because of the desire to avoid the administrative hearings and ensuing processes.

Three other practices increased the productivity of the transportation planning process in Florida:

1. *Presenting development costs in fiscal terms*. One way to frame the urban sprawl issue in a context that citizens can readily understand is to estimate the cost of additional services required by the development. Although landowners have a

financial stake in whether their property can be developed, this development can affect costs or revenue for the community as a whole.

2. *Actively working with other agencies*. The DCA, not FDOT, proposed legislation to create an Office of Smart Growth. Although this complete set of legislation was not passed, it is expected that the issue will be considered again in an upcoming session.

3. *Creating high-quality local comprehensive plans*. Localities that take the time to develop a community-based, thorough, and realistic comprehensive plan are able to avoid frequent changes to the plan as development pressures mount. Benchmarks for a high-quality plan might include some type of urban growth boundary that preserves open space, specific access management guidelines, setback ordinances, an urban services boundary, and a realistic transportation component. A key to creating a good comprehensive plan is knowing where development is going to be desired and then using the plan as a tool to guide, but not stop, growth.

North Carolina Department of Transportation

Generally, NCDOT sees "smart growth" as a way of discouraging urban sprawl through coordinating land use scenarios. This view is reflected in the manner in which NCDOT developed a major transportation plan for the Winston-Salem–Greensboro–High Point area. The process was guided by a 40-member steering committee composed of representatives from citizen, business, and environmental sectors. The committee met monthly or bimonthly to coordinate the study. Because the study area is represented by three MPOs, representatives from the steering committee updated each MPO throughout the study. The North Carolina representative pointed out that toward the very end of the process, there was a 2-month period where initially not much activity appeared to occur, but in retrospect, he recognized this was simply a transition where responsibilities devolved from the more regional steering committee to each MPO.

Initially, two extremes were considered:

1. continuing the present course of land development, with construction moving in a radial direction into the countryside

2. concentrating new development, such that residential and employment centers are in close proximity, and neotraditional centers are encouraged.

The second option was designed to encourage modes of transportation other than the automobile, such as transit, bicycling, and walking. The transportation analysis for the second scenario did indeed show that each of these modes would take substantially more trips than would have occurred under the first scenario. Still, however, in both scenarios the automobile was the dominant transport mode. Further, the congestion levels created under the second option were intolerable in the high-density areas.

A third option was selected, which was described as "being about one third of the way from the first option to the second." Growth is not steered toward high-density urban centers, but it is guided by the path of existing transportation facilities, such as encouraging residential centers near "beltway" (e.g., an interstate highway circling an urban region) interchanges. Further, a permanent advisory group, the Piedmont Authority for Regional Transportation, is expected to help guide the planning process. The authority does not hold decision-making power, however, for transportation or land use decisions. Of interest is the fact that environmental groups accepted the third option once they saw the resultant analysis.

Maryland Transportation Solutions Group

Maryland's governor appointed a panel of individuals with diverse backgrounds, collectively called the Transportation Solutions Group (TSG), to identify strategies to improve transportation in the Maryland portion of the Washington, D.C., metropolitan area.[33] As one might expect, their report outlines a variety of transit, land use, pricing, and automobile travel options to mitigate the additional congestion that is expected to result from population growth over the next two decades. Examples are correlation of tax rates with land density such that those who require more infrastructure pay more taxes, provision of additional funding for land preservation, continual review of zoning requirements to eliminate barriers to better land use (such as large minimum lot sizes), better transit services (including bike and pedestrian access to stations), distance-based automobile insurance to encourage less travel, aggressive ITS applications to enhance traveler information, rail improvements, roadway widenings, and new construction. The report places an emphasis on efficient use of facilities through pricing mechanisms such as high-occupancy toll lanes, parking (e.g., discounts for vanpools or surcharges for long duration), and the shifting of more infrastructure funding toward areas that encourage bicycle, pedestrian, and transit use at the expense of automobile-dominated locations, thereby influencing the location of new development.

The report is noteworthy, however, in its objectivity across several areas. First, the TSG does not promise a reduction of current congestion levels even if all of their recommendations are followed. Instead, the consensus of the TSG is that at best, their strategies can reduce the *growth* in VMT that will occur because of the population growth of the area. Second, the report cites opposing attitudes toward capacity expansion, with some constituents favoring additional transportation facilities to increase mobility and other constituents holding the view that demand for travel itself should be reduced. The response of the TSG is that the transportation planning process needs to focus on building consensus by considering a variety of "innovative transportation and land use tools," presumably those delineated in the report. Third, aspects that are beyond the control of the transportation officials are acknowledged. For example, giving local governments the ability to change property tax rates would require state-level legislative changes.

The Maryland State Highway Administration's staff person offered four keys that facilitated the formation and operation of the TSG and could be applied to other panels:

1. *Use an effective chairperson.* The chair was a nationally recognized figure who could set and meet deadlines, run an effective meeting, maintain enthusiasm, disseminate information, and garner consensus for issues when that was realistic.

2. *Form a top-notch committee.* A panel of 15 knowledgeable individuals, 11 of whom were recognized nationally, encompassed a wide range of disciplines. Depth within specific fields, such as the Rosslyn planning arena, was useful.

3. *Use reliable staff or consultants.* The panel members needed to be able to get their hands quickly on data, projections, and models. The availability of staff to provide this assistance in conjunction with current data from the Washington Council of Governments was vital.

4. *Have a process to handle lack of consensus.* The one issue that could not be resolved was the highway facility known as the InterCounty Connector: the vote was 11 to 4 in favor of the facility. The four dissenting members were able to write a minority opinion included in the report. Inclusion of opposing viewpoints can present a balanced perspective for a controversial topic. On September 23, 1999, *The Washington Post* reported that Maryland's governor had eliminated the connector and ordered the Maryland State Highway Administration to sell the right of way that had been acquired for the facility.[34]

The value of Maryland's smart growth movement may well be the fact that it explicitly coordinates transportation and development. The strength was that rather than being housed within a transportation authority, the panel was formed under the auspices of the Smart Growth Subcabinet. The panel, including both local and national figures, then reported the results of its findings to the governor rather than to the executive branch. It is not necessary to follow a smart growth platform to have such coordination, but in this instance it appears that use of the smart growth label resulted in a change of practice in that a variety of quality-of-life issues (transportation, land use, economic development, and the environment) were tackled comprehensively.

The Maryland representative noted that the TSG report contains a lot of useful recommendations that require examination before a decision can be made on whether, or how, they will be implemented. For example, the report notes: "Acquisition of sensitive land could be accomplished through outright purchase or through the development of a special purpose land trust." If this recommendation were implemented, the funding source would have to be identified. (Similarly, one would presume that the views of the insurance industry would be considered if the distance-based insurance proposal were to be implemented.

Urban Land Institute

A representative of the Urban Land Institute who had also served as part of Maryland's TSG offered several insights for moving transportation planning forward. While echoing the view that one tactic is to commission a blue-ribbon panel such as the TSG, the representative

also noted that a model to consider is the previously mentioned Georgia Regional Transportation Authority, where authority for transportation and land use decisions are housed within a single entity. Yet if an organization as powerful as the GRTA cannot be created, agencies have several options for using community interest in transportation to move the planning process forward:

- *Leverage the involvement of existing groups.* A major catalyst for the formation of the GRTA came from the Atlanta Chamber of Commerce. Similarly, existing business and environmental groups in Northern Virginia, for example, could be used to establish a citizen steering committee for transportation. Although the proximity of three state-level governments (Virginia, Maryland, and the District of Columbia) may hinder the formation of a full-fledged transportation authority, these groups may still be a nucleus of a coordinating body.

- *Populate steering committees with open-minded persons from diverse groups.* The TSG, for example, was composed of members from opposing groups, yet a consensus plan evolved. Part of the reason for this was because members from different organizations were sometimes more moderate in their views and willing to consider a variety of initiatives. However, this moderation did not eliminate opposition, and a minority report was still written.

Urban Mobility Corporation

A representative of the Urban Mobility Corporation who served on the TSG noted three additional characteristics unique to the TSG's assignment. First, the TSG was given a very specific mandate and study area on which to concentrate its efforts rather than being asked to work on statewide planning as a whole. Second, a credible, balanced report resulted in part because opposing groups, such as the business and environmental communities, were equally well represented. Both groups realized they could not move forward with a transportation plan unless they were at least open to discussion. Further, had the TSG's representation been unbalanced, the report would have had far less credibility. Third, the TSG report looks heavily at the master land use plan for Montgomery County—a plan that historically has been viewed as a credible source of information that is expected to indicate future developments accurately. It may be harder to replicate a tradition of master plan consistency, however, in areas where so many transportation investments are resolved at the state level.

Surface Transportation Policy Project

A representative of the Surface Transportation Policy Project served on the TSG and was one of the four members who expressed the minority opinion published as an appendix to the report. With regard to moving a transportation planning process forward, the representative suggested two caveats:

1. *It is very difficult to draw the line between people who cite broad environmental concerns that reflect the views of the community and those who cite environmental*

concerns as a way of stopping a project. What is perceived to be a vocal minority may be articulating the opinions of a broader base of citizens. On the other hand, the motivating factor of people who are simply opposed to a particular project (e.g., the demolition of a driving range within 1/8 of a mile of a transit stop) and who cite violations of the National Environmental Protection Act may be to preserve the facility rather than prevent environmental damage. The fact that such cases exist does not mean, however, that the so-called NIMBY (Not in My Back Yard) syndrome should be attributed to the environmental movement.

2. *Conflict between transportation agencies and environmental groups often arises, at least in part, because input from the community is not solicited until a project is already intended.* A typical scenario might be where increasing traffic counts cause planners to expect to have to widen a particular road from four lanes to six lanes. Because there is a large lag between the conceptualization and implementation of a project, steps such as budgeting, preliminary engineering, and informal conversations between transportation agencies and local governments make take place out of the public eye. Then, after the project has been fleshed out, it may be presented to the public, and it is at this point that the community, including environmentalists, is given the choice of being "for" or "against" it.

The solution to this second issue, although it is challenging to accomplish, is to provide for a type of community visioning before specific projects are conceived. For example, along the Route 29 corridor, communities should be able to visualize how they want the corridor to appear before decisions regarding access management are made. Although this type of visioning is not a panacea, e.g., Maryland's InterCounty Connector had been planned for 30 years and is still controversial, it is one way to encourage community consensus about what types of transportation projects should be considered.

National Association of Home Builders

The National Association of Home Builders (NAHB) points out that there are three "trigger points" in the smart growth debate that citizens perceive immediately: traffic congestion; school crowding; and, for infill areas, safety. Noting that there is disagreement concerning the definition of smart growth, the NAHB believes that its policy statement is relatively mainstream in acknowledging the following:

- *Aggregate demand must be considered.* A disadvantage of the urban growth boundary technique is that it fails to accommodate increased demand for housing. If land prices grow too high, then development may occur in a different municipality with no such restrictions, even if persons then have increased commutes. No-growth advocates do not acknowledge that demand for housing will ultimately result in growth.

- *Individual choices must be considered.* Most people do not oppose transit or townhouses as options, but consumers continue to prefer single-family detached

dwellings along with high auto mobility. The lack of a recession this far into the current business cycle has also contributed to demand.

- *Infrastructure costs should be fair and equitable.* Agreement is widespread that roads and sewer lines are needed, but increasingly through proffers, fees, or other concessions developers are being asked to pay for infrastructure needs for an entire community rather than just new growth. For example, in Prince William County, zoning authorities require $15,000 per new home in some instances.

- *Firm, comprehensive, and open planning should occur.* The NAHB recognizes the value of a strong, coordinated, urban planning process. It is sudden changes to the rules, such as a turnover in government that drastically affects zoning policies, that are the problem.

- *Zoning should encourage, not constrain, innovation.* Builders can preserve open space, for example, by constructing homes at a higher density. Often, local zoning regulations, however, do not allow mixed-use development or higher densities.

- *Discussion, not polarization, is a required element of the smart growth debate.* Growth will occur, a fact that the environmental community has not readily accepted. In some cases, opponents to growth will use loopholes, such as air quality, to stop a needed project. The Fairfax County Parkway, for example, which has eased suburb-to-suburb congestion, was debated about 10 years before it was constructed.

- *Decisions must be made at the local level.* The NAHB's *Smart Growth Policy Statement* tries to establish guiding principles but reflects the belief that specific decisions should be left to localities.

WHAT PRACTICES CAN BE USED TO ENCOURAGE COMMUNITY PARTICIPATION YET MOVE TRANSPORTATION PLANS FORWARD?

What This Effort Tells Us

The word "smart" carries a universally popular connotation. At first glance, who can rightly oppose the notion of "smart growth," since its opposite would presumably be "dumb growth"? Yet the smart growth issue is potentially a divisive one, given the wide number of opinions expressed in the literature, including the World Wide Web. Some of these practices, such as better education of citizens, coordination between transportation agencies and zoning boards, and widespread dissemination of a consistent, community-based comprehensive plan, appear to be benign. Others, such as channeling resources to high-density areas, can potentially have winners and losers, especially from the perspective of residents in such areas who may not be amenable to an increase in density. Proponents of smart growth feel it should reflect the desires of a community. If citizens do not desire an urban growth boundary, then requiring one is not really "smart."

The point of view expressed in this paper is that a transportation planning entity can serve the public interest by avoiding the popular sounding label "smart growth." Rather, the entity should adopt select practices that meet the spirit of TEA-21 and give the community a voice in developing a transportation system that meets its needs. Techniques such as encouraging jurisdictions to coordinate a transportation plan such that they agree on land development goals, determining the actual costs of different development scenarios, and encouraging communities to consider explicitly the impacts of key zoning decisions on transportation are recommended. Yet, as pointed out in Maryland' TSG report, one also needs to convey to the public the limitations of these practices. For example, even the most aggressive attempts to reduce VMT growth through better planning and operations will not improve congestion beyond its present state in suburban Maryland.

Nine Practices Virginia May Wish to Consider to Move the Transportation Planning Process Forward

A product of community participation, in addition to possible agreement on transportation investments, may certainly be disagreement and lost time. One can make the discussion more productive, inclusive, and efficient by considering several types of best practices. These practices do not constitute concrete recommendations, they are not necessarily novel to Virginia's current planning process, and many of them may be applied by both state and regional planning agencies.

Communications Practices to Clarify the Debate

1. *Clarify definitions.* "Smart growth," for example, is an amorphous term that includes a variety of regulatory, funding, and educational techniques. Its exact definition is debated. VDOT can help focus discussion by explicitly stating what is being debated (e.g., encouraging localities to reduce liability requirements for developers of urban brownfield sites) rather than using rhetorical labels such as smart growth. The terms "travel" and "rate of travel" also cause confusion. For example, it is stated that the Ballston area of Virginia has a density that is 5 times greater than that of Fairfax City and that, on average, an acre in Ballston generates 57.5 daily vehicle trips as opposed to 13.9 trips in Fairfax.[33] Although one can say that Ballston generates 17 percent fewer trips per person than Fairfax, it is clear that an acre of Ballston produces far more total trips than an acre of Fairfax.

2. *Focus on the facts.* Stakeholders with different viewpoints will tend to cite statistics that support their position. One can prepare for such debate by analyzing the underlying data. For example, development consumption can be portrayed as acres per hour or as a percentage of the continental United States, depending on whether one wants to show development as significant or insignificant. VDOT cannot remove rhetoric from the various positions that other groups will maintain, yet it can lead by example through a candid exposition of the current state of knowledge. One of the most important findings of this effort is that singular statistics or anecdotes tend to increase confusion rather than improve the quality of the discussion. Being candid about the limits of the effectiveness of some strategies, such as

coordinating transportation and land use, as exemplified by the NCDOT study, may reduce polarization.

3. *Identify which government entities have jurisdictional control over which decisions.* Citizens are not always aware that within counties and unincorporated towns, VDOT is generally responsible for roadway construction and maintenance, counties are responsible for zoning decisions, the Environmental Protection Agency ensures compliance with air and water quality, and the Commonwealth Transportation Board has the final ruling on whether new projects (e.g., bypass location and construction) will be initiated. The role and viewpoints of local governments should also be clearly identified.

4. *Clearly identify and prioritize areas that require further research.* A corollary is to state the limitations of current knowledge, such as quantifying the extent, if any, to which higher density development will reduce automobile trips. Although it is not feasible to address all of these topics, empirical studies in key areas may be further pursued:

    - numerical estimates of the costs of transportation services as a function of alternative land use scenarios
    - the extent that transportation investments stimulate or redistribute economic growth
    - the impact of pedestrian- or bicycle-oriented design on automobile use
    - the amount of latent demand in moderately congested areas
    - the economic effects of access management on affected businesses (e.g., trip chaining)
    - a realistic length of the planning horizon (e.g., how long does it take for transportation impacts to cause visible changes in land development?).

    Answers to these issues can help make the debate more productive. For example, citizens may prefer a land use configuration that requires a greater investment in roads than an alternative configuration. Knowing the extent to which costs for transportation services vary depending on land use configurations would aid in this debate. Resolution of these questions does not require interference with governing legislation. For example, even though TEA-21 mandates the development of a 20-year long-range transportation plan for MPOs, it would be useful for planning entities to know whether 20 years is sufficient time for land use development to respond to the impacts of changes in the transportation system. This knowledge could be used by localities and statewide entities to better understand transportation/land use relationships, regardless of regulatory requirements.

Consensus Building Practices to Form a Coalition of Diverse Partners

5. *Promote a master development plan that cultivates agreement among the differing parties.* For example, one logical technique that could integrate VDOT's GIS and 3D/4D

visualization capabilities is to make expected transportation improvements and zoning intentions available in a graphical format over the World Wide Web. A simple state map with zoom capabilities that enables viewers at a glance to see roadways along with land uses and densities would initiate the process. Follow-up work could include maps showing expected peak hour or average travel speeds as a function of roadway capacity, access, and planned development. The plan would not ensure consensus about what actions VDOT and localities should take, but it should at least provide a solid starting point. For example, a plan could begin to clarify the extent of access management that is expected on key rural transportation corridors, such as Route 29 between Albemarle and Prince William counties. Encouraging localities to create consistent, open, long-range, high-quality plans would facilitate this process.

6. *Explicitly state the views of MPOs when incorporating regional plans into the statewide decision-making process.* For example, the Hampton Roads Metropolitan Planning Organization favors the creation of tolls on the Hampton Roads Bridge-Tunnel and other key crossings to fund local transportation improvements.[35] Although the Hampton Roads Planning District Commission notes that authority to make this decision is at the state and federal level, a statewide planning process should actively consider them as one possible funding strategy and clearly acknowledge that such tolls are the desires of the local governments.

7. *Work with localities and MPOs to develop an effective mix of zoning requirements and incentives.* There may be situations where VDOT recognizes that particular types of zoning could encourage efficient use of the transportation system, such as the placement of commercial centers in proximity to high-density residential units. Counties may wish to consider, for example, techniques that give developers a balance of requirements and incentives, such as permitting higher density development in exchange for more architectural amenities. As pointed out by the National Association of Home Builders, zoning need not eliminate innovation. These zoning requirements will not be dependent on only transportation. In fact, localities may choose zoning that does not necessarily encourage the most efficient use of the transportation system. VDOT can, however, be postured as an entity that provides feedback to localities as to how expected zoning configurations will affect travel demand. Localities would have the responsibility to resolve any conflicts that result from a land use plan favored by a majority of persons in the community yet opposed by a particular group. The type of visioning process mentioned by the representative of the Surface Transportation Policy Project may be one way to have a productive debate concerning different types of transportation improvements in the local comprehensive plans that would later be considered for a particular corridor or area. VDOT can provide this assistance by helping localities, when they so request, develop their comprehensive plans.

Legislative Practices to Integrate Transportation and Land Use Decisions

8. *Consider legislation that places transportation and zoning decisions within the same entity.* Maryland and Georgia have taken steps to create a body that has both transportation and land use authority. The advantage is that transportation and land use decisions can be explicitly

coordinated. Although both Georgia's GRTA and Maryland's smart growth initiatives are in their beginning stages, they provide one way to ensure that transportation requirements are considered prior to development. Further study is required to determine whether such a body would be feasible and effective in Virginia. In any event, VDOT could still work to integrate transportation and land use decisions through the active use of advisory groups and access permits. The goal of this suggestion is to encourage explicit coordination of transportation and zoning decisions, but if this goal is not met by placing transportation and zoning decisions within a single entity, then there is no need to pursue practice 8. Additionally, as explained for practice 9, several state agencies influence, but do not control, local land use planning. These practices do not imply modifying the authority or structure of these statewide agencies, but they should be considered in any study that looks at the feasibility and utility of placing transportation and zoning decisions under one roof.

9. *Share planning responsibilities with other entities, either formally or informally*. In Florida, for example, the Department of Community Affairs administers the state's growth management statute and works with localities, but the DCA can ask FDOT to provide an objective analysis of the transportation impacts of the development. Maryland's structure appears to go even further: the TSG, for example, reported to the governor's cabinet. In both cases, the organizational structure suggests that politics are removed from the transportation agency, which then becomes a more objective source of information, analysis, and transportation project implementation. Even without legislation, a blue-ribbon panel such as Maryland's TSG or steering committees as suggested by the Urban Land Institute may be appropriate for an issue that is so divisive that consensus within the usual planning framework is not feasible (e.g., if a DOT and an MPO cannot come to a resolution).

   Although zoning decisions are made at the county and city level, several state agencies other than VDOT can influence or have an interest in local land use planning, such as the Department of Housing and Community Development (DHCD); the Department of Conservation and Recreation (DCR); and, for a very specific program, the Department of Taxation. Implementation of practice 9 would require further study of the roles and responsibilities of these agencies to determine the feasibility and efficacy of such sharing in Virginia. For example, a representative of the DHCD pointed out that his department is not involved in land use planning per se, although in the 1970s and early 1980s the DHCD did work in detail with localities as they developed land use plans. Because of its focus on providing affordable housing, the DHCD is one entity that could provide a perspective on specific techniques as they relate to the supply of affordable housing. As pointed out by a DCR representative and DCR's web site, there is already quite a bit of coordination, or areas of potential involvement, between the DCR and either VDOT or localities in terms of land use, planning, and transportation issues. Examples include, but are not limited to, the Virginia Byways Program, the Virginia Scenic Rivers Program (where the DCR works with localities that have a designated scenic river in their jurisdiction to ensure that land use plans preserve the character of land adjacent to the river), bicycle route planning, the preservation of state parks and natural areas (where the DCR will attempt to provide advice to localities about land use and zoning ordinances that can help protect these areas), and the State Land Evaluation Advisory Council (where the DCR works with the Department of Taxation to allow, for localities that so choose, land to be taxed according to its use rather than its value).

The rationale behind this last initiative is that agricultural or undeveloped land can be preserved in a location where otherwise high tax rates would force the land to be developed. (Details are described in the *Manual of the State Land Evaluation Advisory Council*, available from the Department of Taxation.) Finally, one of the responsibilities of the Chesapeake Bay Local Assistance Department is to "ensure that local government comprehensive plans, zoning ordinances, and subdivision ordinances are in compliance" with regulations promulgated under the 1988 Chesapeake Bay Preservation Act.[36] For jurisdictions in Virginia whose land use activities eventually affect the quality of the Chesapeake Bay, land use decisions must protect the water quality of the bay. Although many of these 84 counties, cities, and towns are located in the Tidewater area, they can include any jurisdiction that affects the water quality of the bay, such as Fairfax County or the City of Petersburg.

WHAT CAN A TRANSPORTATION AGENCY DO TO IMPLEMENT THE BEST PRACTICES?

The next step for a planning entity such as VDOT should be to determine whether there are aspects of the nine practices that are not being done, and, if so, whether their application would improve transportation planning in Virginia. Consideration must also be given to the regulatory framework governing the planning process. For example, the NAHB's suggestion that growth decisions be made at the local level is reasonable but must be tempered by the fact that TEA-21 gives the state an explicit role in the coordination of regional transportation plans. Similarly, implementation of a concept similar to Florida's concurrency statute would require legislation (although it appears that such legislation could be written such that land use decisions as well as determination of what constitutes an acceptable level of service could still be made at the local level, provided adequate sharing of information is maintained between the state and localities).

Perhaps some guidance may be found in a quotation by Robert Ardrey: "While we pursue the unattainable we make impossible the realizable."[37] Following the nine best practices will not lead to a utopian transportation and land use situation. As pointed out in Maryland's TSG report, congestion will remain even if all recommended improvements are undertaken at the planning stage. The practices do reflect concepts, however, that appear promising for achieving consensus and taking actions more rapidly, even if they can be implemented only in a piecemeal approach. Thus, even if Virginia does not have legislation comparable to legislation in Florida, Maryland, or Georgia as mentioned in practices 8 and 9, VDOT can still work to achieve consensus through the other practices.

In particular, practices 1 through 4 are principles that transportation planning entities, such as VDOT and MPOs, can implement at crucial points during the transportation planning process, such as during the creation of regional and statewide plans. Practices 5 through 7 are specific initiatives that planning entities can undertake even if other agencies are uncooperative. Practice 5, promoting a master development plan over the Web, is the application of fairly common technology to ensure citizens have adequate information in a digestible format.

Practice 6, explicit consideration of the views of local governments, shifts responsibility for some of the difficult decisions, such as the example of tolls on I-64, to the local governments, which is appropriate given that these entities should have planning authority under the auspices of TEA-21. This shift in responsibility does not mean that localities are responsible for operating or maintaining state highways. Instead, it enables localities to share the political burden associated with difficult planning decisions, such as making the trade-off between expending additional funds (e.g., through tolls) or suffering from reduced system performance (e.g., though additional congestion). Practice 7, working with localities and MPOs, is a technical assistance initiative that may be undertaken by planning entities such as VDOT if there are sufficient staff. Practices 8 and 9 are the most ambitious and should be considered only if deemed appropriate after further investigation. Realistically, a planning entity should focus on the first seven practices before seeking additional legislation.

Some research questions remain unanswered or are not well understood, such as the relationship between density and VMT per person outside very-high-density areas. Finding the answers to these questions can also make the public debate more productive. In this regard, an entity responsible for planning can work not only to make facts available but also to provide analysis that responds to some of the questions outlined in practice 4.

Returning to the title of this paper, the authors are not implying an endorsement of the smart growth slogan. Although some tactics that fall under the label are beneficial, others represent hard choices with winners and losers. Instead, the response of selected organizations to the smart growth issue does offer insights into improving the planning process. The examples of Florida, Maryland, and Georgia illustrate how the sharing or transfer of transportation planning authority can potentially bring about explicit integration of transportation and land use decisions, along with the tradeoffs these decisions will entail. Because these initiatives are relatively new, they should be monitored for implementation lessons that Virginia can use.

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APPENDIX: COMPARISON OF TWO SAMPLE ANECDOTES

This Appendix illustrates one method for comparing two viewpoints possibly in dissension. These two positions are not unique; they are chosen only as an illustration of how one can investigate statistics that may be cited by various stakeholders. The value of this analysis is not the selection of either viewpoint but instead an understanding of how to compare the validity and context of each.

For example, consider two national publications that each seem to cite statistics that support differing viewpoints as to the necessity of smart growth. Excerpts from articles in these publications read as follows:

A:"…suburban expansion consumes just 0.0006 percent of the continental United States annually." [26]

B:"…the loss of prime farmland (equal in the 1980s, for example, to the combined area of Connecticut and Rhode Island) to the bulldozer…"[38]

Three striking features arise when comparing these quotations. *First*, although supporting differing attitudes toward smart growth, the quotations themselves are not necessarily in disagreement: the former focuses on the growth of suburbs while the latter concerns the depletion of farmland, and the two are not necessarily synonymous. *Second*, definitions, sources, and time periods are not readily apparent: it may not be immediately obvious from source *B* that farmland in this instance probably refers to cropland but not pasture or rangeland. *Third* the magnitude of the problem is compared against two different benchmarks, one being the continental U.S. and the other being two of the states that are smaller, in area, than most of the lower 48 states.

Yet just as one should not immediately favor one side over another, one should not arbitrarily assume that the most factual response is an average of the different positions. Instead, one should attempt to verify the data underlying these different positions, in order to ensure that facts are as well understood as possible. The important aspect of this analysis is that it shows how a transportation planning agency can contribute to the quality of a land use debate by being a source of information and objective analysis.

The U.S. Census Bureau reports that the entire U.S. contains approximately 3.536 million square miles of land (3.787 million square miles of total area), with approximately 0.57 million square miles of land belonging to Alaska and 0.0064 million square miles of land belonging to Hawaii, yielding a suggested 2.96 million square miles (1.89 billion acres) in the continental U.S. Similar computations with the 1992 National Resource Inventory suggest an area of 1.88 billion acres in the continental U.S. [39,40,41,*]

*1 square mile = 640 acres. The discrepancy may result from how the Virgin Islands and Puerto Rico are classified.

The National Resources Inventory notes two complicating factors in this debate: the definition of "farmland" and the fact that that approximately 22% of the U.S. is Federal Land. The NRI does point out, however, that from 1982 to 1992, cropland decreased by about 39 million acres and developed land increased by 14 million acres. It is not the case that all cropland was developed: in fact, of the 14 million acre increase in development, only about 4 million came from cropland: the remaining 10 million newly developed acres came from forest, pasture, and rangeland.[42]

Evaluation of Source A

Still, assuming the NRI is correct in stating that 14 million acres of development growth occurred from 1982 to 1992, this reflects an average rate of consumption of 0.074% of the continental U.S., including all Federal lands, which is clearly larger than the figure cited by source *A*. Even if one counts only the developed acreage that was formerly cropland (4 million acres), this still represents 0.021% of the continental U.S. per year.

These figures alone do not prove that source *A* is incorrect: it is possible that the rate of development has slowed considerably since 1992 (although that does not seem to be likely). It is also quite possible that growth in industrial or commercial sites, such as airports or manufacturing plants, reflects a much larger portion of the development than what is explained suburban growth. Clearly, though, if suburban growth only reflects a portion of the growth in developed land, one would want to know what else is causing that development. From that angle, then, view (*A*) is at least incomplete.

Evaluation of Source B

Connecticut and Rhode Island, respectively, have land areas of 4,845.4 square miles and 1,045.0 square miles, for a total of 5,890.4 square miles. This translates into 3.78 million acres of farmland being developed over a ten year period, according to source *B*. Statistics from the five-year censuses conducted by the Department of Agriculture show that between 1982 and 1992 or between 1978 and 1987, approximately 10 million acres of cropland were converted to other uses.[46] The NRI figure of 4 million of these acres becoming developed between 1982 and 1992 is close to the figure cited by source *B*.[42] The American Farmland Trust which relies on NRI data notes that over that period, approximately 4.26 million acres of "prime or unique farmland" were converted to urban land.[43]

Comparison of the Two Sources

Another way of comparing sources *A* and *B* is to present them in like units. If source *A* is accurate, then about *1.3 acres per hour* are being consumed by suburbs. If source *B* is accurate, then (at least during the 1980s), an average of *43.0 acres per hour* were taken by the bulldozer. There is more than an order of magnitude difference in the rates implied by sources *A* and *B*.

Overall, both sources do not mention key definitions and assumptions, and nor would this be expected since to do so might make the articles intolerably long. Unless, however, it can be shown that either the rate of suburban expansion has decreased during the last seven years or that most of the development in the continental U.S. is caused by some other type of land use than suburbs, then it appears that for this particular case source *B* is more accurate. (In fact, a later article rescinded the figure cited in source *A* as a math error.[44])

Yet a more important lesson is that each source places these numbers within a specific context for the reader. A person who holds a view toward smart growth that is supported by source *A* might also include the fact that only about 92 million acres – approximately 5% of the continental U.S. – are developed.[45] A person who holds a view that relies on source *B* might indicate that numbers by themselves do not tell the whole story, citing the steady drop in farmland between 1964 and 1997, where farmland includes cropland, pasture, range, and wooded areas.[46]

Of course, the amount of land area that is classified as "developed" is only one component in the debate as to whether growth in development is significant. Factors such as the quality of farmland that is available, impacts on water supply and automobile traffic, visual appeal, and rights of individuals also enter into the debate. For example, consider the perspective of an individual who drives a 100 mile route from his country home to the CBD and notices increased strip development along that route, as has been the case for Route 29 between Charlottesville and Washington, D.C. Assuming that Route 29 attracts as many as 50,000 vehicles per day in portions along this stretch, a large number of people are exposed to signs of increased development. Yet if this "strip" development occupies ¼ mile on either side of Route 29, then that 100 mile stretch represents a developed region that is approximately 0.1% of the entire state's surface area (39,598 square miles).[47] In this hypothetical example, one can cite either the large number of people who see growth along Route 29 (to argue that development needs to be controlled) or the corresponding small piece of land that is "consumed" by development (to argue that there is no need for intervention). By themselves, simple anecdotes do not resolve the issue.

REFERENCES

1. U.S. General Accounting Office. *Community Development: Extent of Federal Influence on "Urban Sprawl" Is Unclear*. GAO/RCED-99-87. Washington, D.C., 1999, pp. 2-4.

2. Committee for Study of Impacts of Highway Capacity Improvements on Air Quality and Energy Consumption. *Transportation Research Board Special Report 245: Expanding Metropolitan Highways*. Transportation Research Board, Washington, D.C., 1995, pp. 223, 374.

3. Wheeler, L. Broken Ground, Broken Hearts: In '50s, Many Lost SW Homes to Urban Renewal. *The Washington Post*, June 21, 1999, pp. A1, A7.

4. Weiner, E. History of Urban Transportation Planning. Originally in *Urban Transportation Planning in the United States: An Historical Overview*, Praeger Publishers, New York, 1987. Abridged in *Public Transportation*, G.E. Gray and L.A. Hoel, eds., Prentice-Hall, Englewood Cliffs, New Jersey, 1992, pp. 46-76.

5. Twomey, S. Less Is More. *The Washington Post*, July 5, 1999, pp. C-1, C-8, C-9.

6. Pyatt, R.A., Jr. Waiting for Two States to Grow Smart. *The Washington Post*, June 21, 1999, Business, p. 4.

7. Kackar, A., and Briechle, K. Answers to Questions, Smart Growth Network, at http://www.smartgrowth.org/index_frameset.html on June 28, 1999.

8. National Association of Home Builders. NAHB's Statement of Policy on Smart Growth, at http://www.nahb.com/smartpolicy.html on June 28, 1999.

9. Smart Growth Q&A (draft). City of Austin, Texas, at http://www.ci.austin.tx.us/smartgrowth/smart_q&a.htm on June 28, 1999.

10. The Surface Transportation Policy Project and the Natural Resources Defense Council. *Smart Growth Toolkit*, at http://www.tea21.org/smartgrowth/default.htm on June 28, 1999.

11. City Planning: Paradise Dimmed. *The Economist*, August 9, 1997.

12. Couret, C. Putting Big Ideas to Work. *American City & County*. Intertec Publishing Corporation, Atlanta, July 1999, pp. 20-23.

13. Duerksen, C., Johnson, E., and Fricke, C. *Smart Growth and Development Summit White Paper*. Colorado Department of Local Affairs, 1995, at http://www.state.co.us/smartgrowth/whifront.htm on June 29, 1999.

14. Levine, J. Access to Choice. *Access*, Spring, No. 4, University of California Transportation Center, Berkeley, 1999, pp. 16-19.

15. Transportation and Growth Management Program. *Smart Development Code Handbook.* Oregon Department of Transportation and Oregon Department of Land Conservation and Development, Salem, 1997.

16. Maryland Department of Housing and Community Development. *Live Near Your Work Program*, at http://www.dhcd.state.md.us/lnyw.htm on June 29, 1999.

17. Maryland Department of Housing and Community Development. *Neighborhood Partnership Program Tax Credits Fact Sheet* at http://www.dhcd.state.md.us/npp.htm on June 29, 1999.

18. Murakami, K. 1999. Not All Cities in King County Sharing Brunt of Growth. *Seattle Times*, March 1, 1999, at http://www.seattle-times.com/news/local/html98/altgrow_19990301.html on July 9, 1999.

19. Reichert, P. *A New Community Vision: Montana's Empowerment Project (Alternative Energy Resources Organization).* Federal Transit Administration, Washington, D.C., at http://www.fta.dot.gov/library/planning/cep/nuvis.html on June 29, 1999.

20. Unlonely Spaces: The Crowded West. *The Economist*, March 25, 1995.

21. Lawrence, B.L., and Margolin, D. *State Plan Update: 1999.* New Jersey Future, Trenton, 1998, at http://www.njfuture.org/HTMLSrc/updatestateplan.html on July 9, 1999.

22. Moretti, F.R. *Smart Growth: A Wolf in Sheep's Clothing?* The Road Information Program, Washington, D.C. (This site is available at http://www.tripnet.org/smartgrowthpaper.htm as of September 23, 1999.)

23. Frank, L.D., and Dunphy, R.T. *Smart Growth and Transportation*. The Urban Land Institute, Washington, D.C., at http://www.uli.org/pubs/UrbLand/dunphysgt/dunphysgt.htm on June 29, 1999.

24. Loudoun County Democratic Committee. *Smart Growth Score Card*, at http://www.shirenet.com/lcdc/scores.htm on June 29, 1999.

25. McOmber, M.J. Will "Smart Growth" Prove to be Smart Political Topic. *Seattle Times*, March 1, 1999, at http://www.seattle-times.com/news/local/html98/altgore_19990301.html on July 9, 1999.

26. Will, G. F. Al Gore Has a New Worry. *Newsweek*, February 15, 1999, p. 76.

27. Goldberg, D. "Smart" Plan Offered for Curbing Sprawl. *The Atlanta Journal-Constitution*, December 2, 1998, viewed at http://www.accessatlanta.com/news/1998/12/02/smart_growth.html on July 16, 1999.

28. Steiner, R.L. Residential Density and Travel Patterns: Review of the Literature. *Transportation Research Record 1466*. Transportation Research Board, Washington, D.C., 1994, pp. 37-43.

29. Cervero, R. Travel Demand and the 3Ds: Density, Diversity, and Design (Abstract only). *Transportation Research, Part D*, No. 9, 1997, pp. 199-219.

30. Wells, S.S., and Hutchinson, B.G. Impact of Commuter-Rail Services in Toronto Region (Abstract only). *Journal of Transportation Engineering*, Vol. 122, No. 4, 1996, pp. 270-275.

31. Davis, J. S. et al. *Report 423A: Land Use Impacts of Transportation: A Guidebook.* Transportation Research Board, Washington, D.C., 1999, pp. 17, 21.

32. Dunphy, R.T. *The Cost of Being Close: Land Values and Housing Prices in Portland's High Tech Corridor.* Paper 600. Urban Land Institute, Washington, D.C., 1998.

33. Transportation Solutions Group. *Providing More Travel Choices for Suburban Marylanders: Steps to Improve Mobility and Quality of Life in a Growing Region.* Maryland State Highway Administration, Baltimore, 1999.

34. Sipress, A. Glendening Kills InterCounty Connector. *The Washington Post*, September 23, 1999, p. A1.

35. Hampton Roads Planning District Commission. *Hampton Roads Review*, July, August, September 1999. Hampton, Virginia.

36. Chesapeake Bay Local Assistance Department. *About CBLAD and Virginia's Bay Act Program,* Richmond, Virginia, at http://www.cblad.state.va.us/about.htm on October 13, 1999.

37. Watzlawick, P., Weakland, J.H., and Fisch, R. *Change.* W.W. Norton & Company, New York, 1974, p. 47.

38. They Can Yet Be Resurrected. *The Economist*, Economist Newspaper, Ltd., January 10, 1998.

39. U.S. Department of Agriculture Natural Resources Conservation Service. 1994. *1992 National Resource Inventory*, Table 1, Surface Area of Non-Federal and Federal Land and Water Areas, by State and Year, at http://www.nhq.nrcs.usda.gov/NRI/tables/1992/table.1.html on July 8, 1999.

40. U.S. Census Bureau. 1996. *Density Using Land Area for States, Counties, Metropolitan Areas, and Places,* Table 1, Land Area, Population, and Density for States and Counties: 1990, at http://www.census.gov/population/www/censusdata/density.html and http://www.census.gov/population/censusdata/90den_stco.txt on July 8, 1999.

41. U.S. Census Bureau. 1993. Table 2: Population, Housing Units, Area Measurements, and Density: 1790 to 1990, excerpted from *1990 Census of Population and Housing, "Population and Housing Unit Counts," CPH-2-1*, at http://www.census.gov/population/www/censusdata/density.html on July 9, 1999.

42. U.S. Department of Agriculture Natural Resources Conservation Service. *1992 National Resources Inventory Highlights* at http://www.nhq.nrcs.usda.gov/NRI/1992_highlights.html on July 2, 1999.

43. Sorensen, A., Greene, R.P., and Russ, K. 1997. Farming On the Edge, American Farmland Trust (produced by the Center for Agriculture in the Environment, Northern Illinois University, DeKalb, Illinois), Table 7, at http://farm.fic.niu.edu/foe2/report/foetab7.html on July 8, 1999.

44. Pedersen, D., Smith, V.E., and Adler, J. Sprawling, *Newsweek*, July 19, 1999, pp. 23-27.

45. U.S. Census Bureau. 1998. *Statistical Abstract of the United States: 1998*. Section 6 (Geography and Environment), Table No. 390, at http://www.census.gov/prod/3/98pubs/98statab/cc98stab.htm on July 8, 1999.

46. U.S. Department of Agriculture. 1999. *1997 Census of Agriculture*, Volume 1, Geographic Area Series, Part 51, Report AC97-A-51, Washington, D.C., Table 1, p. 10.

47. *County and City Data Book*. U.S. Department of Commerce, Bureau of the Census, Washington, D.C., 1994.