Is TDR in Virginia DOA? A Study of the State of Transfer of Development Rights Programs in Virginia

Alissa Akins
Virginia Commonwealth University

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Is TDR in Virginia DOA?
A Study of the State of Transfer of Development Rights Programs in Virginia

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Urban and Regional Planning at Virginia Commonwealth University.

by

Alissa Marie Akins
Bachelor of Arts Honours Degree, McGill University, Montreal, QC, Canada, 2006

Director: Dr. Avrum J. Shriar, Associate Professor, Urban and Regional Studies and Planning
Virginia Commonwealth University Richmond, Virginia, August 2012
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Abstract

IS TDR IN VIRGINIA DOA? A STUDY OF THE STATE OF TRANSFER OF DEVELOPMENT RIGHTS PROGRAMS IN VIRGINIA

Alissa Marie Akins, Master of Urban and Regional Planning

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Urban and Regional Planning at Virginia Commonwealth University.

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Director: Dr. Avrum J. Shriar, Associate Professor, Urban Studies and Planning

Transfer of development rights has been approved as a tool to manage growth in Virginia since 2006, yet it has not been widely employed. This tool can be used to direct growth and development at little or no cost to society while simultaneously preserving land for future generations. In an effort to understand the limited use of transfer of development rights programs in Virginia, this research collected information regarding obstacles and limitations to TDR program development and implementation, from every locality in the Commonwealth authorized to employ this tool. Based on findings of pertinent TDR literature, this research outlines the environment in which policy in Virginia is being developed as well as obstacles and limitations facing localities in developing TDR ordinances. Findings show that localities perceive several obstacles to program implementation and that certain socio-economic characteristics may have an impact on TDR program development in the Commonwealth of Virginia.
CHAPTER I - INTRODUCTION

Facing growth pressures that are higher than the national average, the Commonwealth of Virginia needs to rethink its approach to managing growth and development. Growth management is important to preserve land, avoid sprawl, decrease infrastructure costs, and create more livable communities. However, conventional zoning regulations may not be adequate to preserve land and manage growth. The Code of Virginia authorizes and advises the use of several tools to help manage growth and development throughout the state, yet localities rely heavily on only a select few. Of the tools authorized by the Code of Virginia to manage growth, this research determined that special exception permits are used by a majority of localities in the state. Unfortunately, special exception permits are not part of a long-term, comprehensive planning strategy, but a piecemeal approach that results in a locality undertaking reactive measures to manage growth.

Several other tools authorized by the state code are significantly more proactive. Not only can these tools help guide growth and development, but they can also help preserve land, plan future growth, and create communities in which people want to live. Transfer of development rights (TDR) is one of these tools, however it is used only by two localities. Transfer of development rights programs result in more compact growth patterns by guiding community growth to areas that have been previously designated and sited for growth potential. Transfer of development rights programs operate a private market exchange of development rights and
preserve land at little or no cost to the community. Transfer of development rights programs involve the separation of the development rights from one parcel of land that can later be attached to another, different parcel of land. Land a community wishes to preserve is called the sending area and land planned for increased density is called the receiving area. The owner of the development rights can gain compensation either by using the rights to build at a higher density in the receiving area or by selling the rights to a developer who wishes to build at a higher density in the designated receiving area. No new development rights accrue with the land in the sending area and the land remains preserved in perpetuity. Successful programs have a high degree of political and community support, properly designated sending areas, and well-sited receiving areas. Furthermore, successful programs have strict zoning in the sending area and offer few or no alternatives to TDR.

Two features that distinguish transfer of development rights programs from other growth management and land preservation tools are that it provides compensation to land owners and preserves land in perpetuity. Unlike tools that manage growth in a piecemeal fashion by responding to individual requests for density increases, transfer of development rights works in conjunction with comprehensive planning and takes a proactive approach to preserving land and managing growth.

This research sought to understand why localities in Virginia are not using transfer of development rights programs to manage growth and development. I contend that transfer of development right programs would not only help preserve large tracts of land in the state, but also direct growth to create more livable communities. Transfer of development rights can help a locality undertake more proactive planning. Rather than tackling growth concerns in a piecemeal
manner, transfer of development rights programs can offer a more comprehensive and holistic approach to planning in Virginia.

The second chapter of this thesis outlines the theoretical and policy framework that laid the foundations for my research and informed my methodology and data analysis. It also includes an overview of farmland preservation and growth management tools and background on transfer of development rights programs. The third chapter outlines the Virginia context and explains the development of TDR legislation in Virginia, current programs, and any obstacles to program development. The research design and methodology chapter explains how the research was conducted and how the results were tabulated and analyzed. The chapter on results and discussion outlines survey results and develops an in-depth discussion of how these results relate to findings of previous TDR and growth management research. And finally, the conclusions chapter entails a set of policy recommendations for planners and policymakers in the Commonwealth of Virginia to help strengthen the current TDR legislation and increase the use of transfer of development rights as a proactive tool to manage growth and preserve land.
CHAPTER II – THEORETICAL AND POLICY FRAMEWORK

Theoretical Background and Framework

Pragmatic Rationality

Rational planning and pragmatic rationality frame the structure and methodology of this project. Rational planning has long been the dominant paradigm in planning practice. This model assumes that, with perfect knowledge of every factor in a given situation, one can employ pure rationality in decision-making (Brooks 2002). However, since this type of rationality is impossible, pragmatic rationality becomes the default approach employed by planners. This involves applying foresight and intelligence in an attempt to solve problems that shape our future. Under pure rationality, consensus and agreement are reached through data collection and empirical measurement, but pragmatic rationality operates through value-centered reasoning and understanding. It assumes that planning is not value neutral and that “…truth cannot be understood outside of the sociological and psychological processes and the community which make truth possible…” (Verma 1996: 10). Pragmatic rationality is value-based rationality, through which truth is not determined by data, rather by the data as viewed in the community in which it operates. The same data may be interpreted differently and because of this, “…there is little that can be regarded as independent of the community’s conception of what is true of false” (Verma 1996: 10).

Furthermore, according to Flyvbjerg (1998, 2002), power dominates rationality in the
dynamic relationship between the two. “Power does not limit itself, however, to simply defining a given interpretation or view of reality, nor does power entail only the power to render a given reality authoritative. Rather, power defines, and creates, concrete physical, economic, ecological, and social realities” (Flyvbjerg 1998: 320). Thus, power defines what constitutes reality and because of this, certain myths may persist, even when they are not factually true (Flyvbjerg 1998; Flyvbjerg 2002). Pragmatic rationality is important to this project since it assumes policy creation takes place within a given social, economic, political and cultural context. Any information gathered through this research cannot be viewed as independent of the context to which it relates.

Systems Theory

The systems theory of public policy may help explain why TDR programs have not been more widely adopted in Virginia as it relates to why a given policy is, or is not, adopted. Easton (1957) states that political life is a system of activity in which there are important consequences to society, which he terms outputs (political decisions). Inputs are cycled into the system and lead to outputs. “These inputs are converted by the process of the system into outputs and these, in turn, have consequences both for the system and the environment in which the system exists” (Easton 1957: 384). The inputs into the political systems are of two types: demands and support. Easton (1957) states that the reason a political system emerges at all is because demands are being made by a person or group in society that are not fully satisfied. Implicit in this model then, is the assumption that policies are made in response to demands. Support, on the other hand, is generated in two ways, through outputs that meet demand and through the process of politicization. In this way, outputs become inputs into the political system and the system
becomes self-reinforcing and self-regulating. Thus, inputs into the political system, whether supports or demands, affect the outputs from the political system, in this case policy, which in turn leads to more or new inputs and the system keeps functioning in a cyclical manner.

![Diagram of political system](image)

**Figure 1: “An Approach to the Analysis of Political Systems” Adapted from Easton (1957)**

Systems theory assumes that the environment creates supports and demands, but the environment may consist of many variables including varying socio-economic factors. This theory attempts to understand preferences and the influence competing demands can have on outputs. “If no one desires that a new policy be made, it will not be made; or, if no one wants an operative policy changed, it will not be changed. Policy outputs will not be produced in the absence of preferences” (Weber and Shaffer 1972: 684). Furthermore, “…systems approaches can also be usefully employed as a way of generating distinctive analytical and implementation strategies from which policy-makers can fashion policy recommendations” (Stewart and Ayers 2001: 91). In the absence of demands or preferences, no change will be made and the status quo will remain the operative situation. Weber and Shaffer (1972) contend that indicators of opinion-policy responsiveness could be employed to explain why some state policy-makers are
responsive to public opinion and others are not. This, they say, could “…go a long way in aiding political science in understanding the influence of the political process upon policy-making” (Weber and Shaffer 1972: 699).

Systems theory postulates that “[r]ather than selecting instruments to fit a particular kind of policy problem (the conventional approach to policy design) systems analysis suggests that the nature of the problem cannot be understood separately from its solution. Policy responses cannot therefore be 'designed,' but represent a way of navigating through the problem” (Stewart and Ayers 2001: 83). This theory assumes the interconnectedness of the component issues and players; the idea is that no one issue has a direct cause or solution and that every outcome is an input in a constantly evolving system. Furthermore, this theory suggests that researchers treat systems as wholes, composed of related parts (Stewart and Ayers 2001). Stewart and Ayers (2001) propose that for complex policy problems, such as those concerned with environmental management and regulation, systems concepts offer a way to rationalize aspects of existing practice and suggest directions for improvement.

A key insight from this theory is that the same end goals can be reached in numerous ways; there is no one right course of action to achieve desired results. Similarly, the same course of action may not always produce the same results. “A systems perspective would see options…as a way of identifying a package of actions consistent with the desired end-state of the system, its structural characteristics, and the values of those working within it” (Stewart and Ayers 2001: 88). Clearly then, the environment in which a political system exists, the demands being made and the preferences expressed will have an effect on the outputs generated and on any future inputs into the political system.
Growth Management and Public Policy

Policy is implemented at many levels and growth management decisions have largely been left to local governments, with the exception of a few states (e.g. Florida and Maryland) that have statewide growth management policies. Since few states have statewide growth management policies and the federal government has a weak, if not non-existent, role in growth management, the importance of sub-state governments in regulating growth and preserving land has become critical. Two primary county level issues make policymaking at the county level essential (Steel and Lovrich 2000). First, counties deal with the contrasts between less developed agricultural areas and more densely developed population centers. Secondly, county governments are where state governments generally implement public policy. While not much research has been conducted concerning the role of local governments in growth management policymaking decisions, some public policy literature stresses the importance of the county as a political unit in growth management decisions (Steel and Lovrich 2000; Lubell, Feiock and Ramirez 2005).

Counties are crucial in policymaking because they have been tasked with comprehensive planning and have a high degree of discretion in policy implementation. Local governments traditionally used comprehensive plans and regulatory tools to manage growth, but rising social and environmental costs associated with increased growth have led to the development of other tools (Bengston, Fletcher and Nelson 2004). “Counties are characterized by unique legal distinctions not applicable to many other local governments” (Feiock and Taveras 6). The authority granted to counties, however, is often quite limited and in nearly half the states, including Virginia, counties operate under Dillon’s Rule and thus can exercise only those powers expressly granted to them or necessarily implied.
County governments can be classified into three general types: commission only, commission/administrator, and the council-executive government (Feiock and Taveras). The commission only government is the traditional, unreformed structure whereby an elected commission executes both legislative and executive powers. Elected commissions are generally more heavily involved in daily operations. Reformed forms of government include the commission/administrator and the commission-mayor. The commission/administrator form of government grants legislative authority to the commission or council, but also employs an appointed county manager or administrator to manage the county’s daily operations. The elected executive form of government is employed by many large, urban areas and consists of a separation of powers where the elected officers generally have greater decision-making abilities (Feiock and Taveras). Most cities currently use the council-manager or mayor-council form of government.

The state of Virginia, however, features several more distinct classifications of local government. These alternative forms of government consist of: county executive, county manager form, urban county executive, county manager plan, county board and traditional (Department of Housing and Community Development 2006). All cities in Virginia rely on the council-manager form of government, except the City of Richmond, which now employs a mayor-council form of government since 2004. Under the council-manager form of government, the council elects a mayor from among its members. But in the City of Richmond, constituents elect council members from their voting district and the citizens of the City elect the mayor in an “at large” election (City of Richmond). Studies show that an elected mayor-commission form of government is positively correlated with the adoption of growth management tools (Feiock 2004).
Policy Instrument Selection: Politics, Community Characteristics and Growth Management

Growth management decisions are political choices (Feiock and Taveras) that result from divergent interests and objectives among various groups and community members working to promote the collective good in which they share (Molotch 1976; Logan 1978; Godschalk 1992; Feiock 2004). “These interests encompass those seeking economic gain from development as well as those seeking to promote environmental values, engage in social exclusion or protect their quality of life” (Feiock, Tavares and Lubell 2008: 461). Growth controls, therefore, can be viewed as exclusionary (Bollens 1990; Molotch 1976). A political market framework (Feiock, Taveras and Lubell 2008; Lubell, Feiock and Ramirez 2005; Lubell, Feiock and de la Cruz 2009) helps conceptualize policy adoption at the local level as a result of a mediated process between suppliers of specific instruments for managing growth (i.e. government and political institutions) and demanders of more or less growth in a community (i.e. citizens and other private interests). Analogous to systems theory, this mediated process occurs in an environment composed of various political institutions and socioeconomic characteristics.

The public policy literature concerning growth management theorizes that community socioeconomic and demographic characteristics and local demand, preferences and growth pressures, affect the adoption of growth management tools among local governments (Baldassare and Protash 1982; Feiock and Taveras; Steel and Lovrich 2000). Growth management tools can be market-based or regulatory. Market-based tools use compensation, incentives, or disincentives to regulate growth. Examples of market-based tools include incentive zoning, impact fees and transfer of development rights. The most widely employed growth management strategies are regulatory approaches and include tools such as zoning and comprehensive plan restrictions on land use and urban service boundaries (Feiock and Taveras).
Racially homogenous communities with a high per capita income and high levels of educational attainment are more likely to adopt growth management or land conservation policies (Molotch 1976; Lubell, Feiock and Ramirez 2005; Feiock, Taveras and Lubell 2008), specifically market based tools (Feiock and Taveras; Feiock 2004). On the other hand, diverse, more densely populated and less affluent areas are less likely to adopt growth control regulations. This may be true because more educated populations understand the adverse effects of sprawl, are less preoccupied with other problems, and are likely to support growth management (Feiock, Taveras and Lubell 2008). Education may also lead to a more stable job, the ability to own a home and a vested interest in maintaining community character.

Furthermore, suburban areas have historically been populated by more affluent, white citizens and protecting the character of their community may be paramount (Feiock 2004). Additionally, areas with healthy economies, including low rates of unemployment, are more likely to adopt growth management tools than cities where unemployment is high (Steel and Lovrich 2000). Economically disadvantaged counties are reluctant to adopt policies that would restrict economic activity. Since TDR is driven by similar motivations as other growth management tools, the literature indicates that TDR is more common in counties that are affluent, better educated and racially homogenous (Feiock and Tavares; Feiock, Tavares and Lubell 2008). Higher levels of poverty and percentage black population are linked to a decreased likelihood that a county would employ a TDR program. However, others (Bollens 1990; Gerber and Phillips 2003) assert that demographic characteristics are not good predictors of community support or opposition for growth management policy.

A strong relationship exists between urbanization fueled by rapid growth and the adoption of growth management and land use policies (Steel and Lovrich 2000). Quickly
growing areas create pressure to accommodate growth, which may result in “not in my backyard” (NIMBY) issues and other controversies. Growing urban and suburban counties want to pass the costs of infrastructure onto developers that benefit from growth (Steel and Lovrich 2000). Furthermore, counties with high growth rates may adopt growth management tools to preserve social and environmental amenities that may be threatened by unrestrained growth (Feiock, Taveras and Lubell 2008; Lubell, Feiock and de la Cruz 2009). Environmental amenities can greatly affect land values, particularly when land is scarce, and may be a significant factor in growth management and land preservation decisions. As growth pressures intensify, communities may begin to demand growth management policies to preserve community character. Communities with lower population densities and abundant land feel little threat to their community and way of life. While there is intrinsic value to undeveloped land, many do not see this amenity until it is threatened by growth and development pressures.

Local politics also matters in growth management decisions. Every policy instrument has political and distributive elements that make it more or less desirable to elected officials, interest groups and individuals. Gerber and Phillips (2003) demonstrate that the decisions and strategies of local political actors, including developers and interest groups, play a significant role in shaping local land use and policy outcomes. Similarly, a number of studies (Steel and Lovrich 2000; Baldassare and Protash 1982) outline the importance of citizens and citizen groups in growth management policy adoption. Citizen groups often provide the impetus to adopt growth control measures at the local level and this local activism often results in the development of growth controls. Local political institutional structure may help predict which interest group preferences are reflected in local land use, growth control tools and development patterns (Feiock and Taveras; Feiock 2004; Lubell, Feiock and Ramirez 2005; Feiock, Tavares and
Lubell 2008; Lubell, Feiock and de la Cruz 2009). Political institutions will tend to support different community interests and influence the ability of that interest to affect urban growth. Some government structures are more susceptible to the influence of demand-side actors (Feiock, Taveras and Lubell 2008). “Because growth controls are often exclusionary in nature, local officials find it politically beneficial to adopt them to the benefit of local residents and detriment of newcomers” (Feiock and Taveras). Furthermore, different institutional arrangements will affect the response of political institutions to varying social and economic conditions. Thus, “…the structure of local political institutions helps determine the winners and losers in land-use policy” (Lubell, Feiock and de la Cruz 2009: 650). There exists, therefore, an inherent political element underlying land use policy and growth management controls.

Research has found that the commission and elected executive form of government are most responsive to popular demand and local pressures than the commission administrator structure, and elected executives also tend to be more responsive to community activism (Feiock and Taveras). Feiock, Tavares and Lubell (2008) found that communities that feature commission-only government structures and low levels of business group activity most often implement TDR programs. In contrast, the use of district representation was found to decrease the likelihood of TDR adoption. “This may indicate representation of geographic interests in local politics makes the type of exchanges and agreements necessary for TDR more difficult to achieve” (Feiock and Taveras 19). Similarly, impact fees are most popular under commission only forms of government (Feiock and Taveras) indicating that commission only forms of government may be more inclined to adopt incentive or market based tools. Market-based tools, such as incentive zoning, that shift the costs of new development off current residents, may be favored by commission-administrator governments while more liberal communities may favor
these policies because they are assumed to be less exclusionary (Feiock, Taveras and Lubell 2008). Others, however, find different results. The elected executive and commission administrator forms of government are negatively related to impact fee adoption (Feiock and Taveras). Furthermore, elected executive governments are more likely to adopt regulatory approaches to growth management, according to Feiock and Taveras (p. 20), “[t]his governance institution may offer different opportunity structures for local leaders and create incentives for responsiveness to anti-growth interests.”

Elected mayor-commission forms of government are positively related to the adoption of growth management tools (Feiock 2004). Mayors tend to embrace the preferences of wealthier citizens, are more responsive to broad community interests and may favor pro-environmental policies and oppose development and growth in wealthy communities (Lubell, Feiock and de la Cruz 2009). Furthermore, as socioeconomic status increases, so too does the likelihood of support from mayors regarding pro-environmental policies. While mayors favor the preferences of higher socioeconomic classes, managers favor the preferences of the construction industry (Lubell, Feiock and de la Cruz 2009). “The county-manager form of government is clearly vulnerable to the politics of the growth machine, because managers respond to development interests” (Lubell, Feiock and Ramirez 2005: 724). Others, however, do not agree. Steel and Lovrich (2000) note that although county governments are crucial in growth management decisions, government structures tend to have no influence on the adoption of growth control mechanisms and elected executives are no more likely to adopt growth management tools than commission or commission-administrator government structures.

The decision to adopt growth management tools is a complex decision weighing many factors. Political institutional structure, community preferences and socioeconomic
characteristics all underlie growth management decisions. These decisions are a mediated process between demanders and suppliers in a given community or a particular environment in which policy making occurs.

**Farmland Preservation and Growth Management Tools**

Growth in the form of new development is an inevitable outcome of increases in population. The search for affordable, developable land has led to urban sprawl and extensive encroachment into rural areas (Steel and Lovrich 2000). Urban sprawl creates a range of challenges for environmental conservation, quality of life, urban revitalization and affordable housing (Bengston, Fletcher and Nelson 2004). In an effort to decrease the negative social and environmental effects of sprawl, the public sector, including local jurisdictions, has responded by instituting policies to manage growth and protect open space from development (Steel and Lovrich 2000; Bengston, Fletcher and Nelson 2004). Land preservation and growth management are often perceived as mutually exclusive goals, however they are part of the same process and the best way to preserve open space is to manage growth (Pfeffer and Lapping 1994). It follows that a more holistic approach to managing growth and protecting open space is needed based on a recognition that these two goals are not mutually exclusive.

Farmland preservation and growth management tools are closely related measures that seek to achieve similar goals. While these tools vary in degree of protection, ease of administration and their voluntary nature, both types of tools seek to preserve land susceptible to development pressures and direct growth into areas designated to accommodate population increase. In fact, “[o]ne of the most direct means to limit growth in rural/urban fringe areas is farmland preservation…” (Pfeffer and Lapping 1994: 233). While farms and other agricultural
activities in America may be facing pressures from urbanization, “[e]ven if active farming as an economic activity is no longer profitable, conserving rural land uses may continue to provide rural amenities that justify protection programs” (Heimlich and Anderson 2001: 44). Therefore, even when farming is no longer profitable, there is intrinsic value to farmland that makes it worthwhile to protect.

The literature on growth management tools divides them into two phases. First generation policies, such as zoning and restrictions on residential construction, tend to have highly political and distributive impacts and have been linked to increased housing prices (Feiock 2004). Second generation policies include impact fees, growth boundaries and comprehensive plans. “To a great extent, second-generation growth management tools are directed at sustaining the quality of life in a community by adding costs to development” (Feiock 2004: 365). The literature further divides farmland preservation and growth management tools into categories based on their use and intent. Public policies for regulating growth and protecting open space are broken down into three categories: public ownership and management, regulation and incentives (Bengston, Fletcher and Nelson 2003).

**Public Ownership**

Public goods are assets that the market has failed to adequately supply and which can be provided through public ownership. Non-exclusive property rights and indivisibility of consumption characterize these assets, such that the use by one person does not, in theory, decrease the amount available to others (Bengston, Fletcher and Nelson 2003). Some examples include interstate highways and national defense. The provision of these goods is reflected in the decision to benefit the general public and can be at the local, regional, state or national level.
Regulatory Policy

These policy instruments are characterized by their obligatory nature (Bengston, Fletcher and Nelson 2003). Regulatory approaches for managing growth are most often used at the local level. Some examples include: urban growth boundaries (UGB), urban service boundaries (USB), subdivision exactions, cluster zoning (sometimes also with incentives), downzoning or large lot zoning, agricultural zoning, and concentrating rural development.

Agricultural zoning is the most common and least expensive measure to place restrictions on land. Zoning of any type typically falls within the local government’s regulatory powers and agricultural zoning is no exception. Several forms of agricultural zoning exist. Exclusive agricultural zoning prohibits any use other than agricultural uses. The use of compatible accessory buildings is however permitted. “…[S]upport for highly restrictive agricultural zoning is more forthcoming in rural areas beyond the reach of heavy development pressures” (Arendt 1994: 295).

Another form of agricultural zoning allows residential or non-farm development but severely limits density (Cordes 1999; Arendt 1994). This technique uses large minimum lot requirements, effectively limiting the property to specifically agricultural uses. “Large lot zoning simply requires that the minimum lot size in a designated rural zoning district is set at a large enough size to protect agricultural activities from excessive encroachment of residential and other non-agricultural land uses” (American Planning Association 2010: 24).

A less restrictive form of agricultural zoning is called Area Based Allocation Zoning, cluster zoning, or Open Space Development Design, and can be used to require homes to be built on smaller parcels of land. It increases overall density, but leaves significant tracts of land open for farming or other green space. The number of house lots allowed is directly proportional to the
total acreage the farmer owns. These lots, however, are subject to certain size restrictions and may have to be located in a certain area of the property, perhaps where farming is the least viable (Arendt 1994). “Besides helping to minimize the impact of new subdivisions on adjacent agricultural uses, another virtue of low-density zoning is the opportunity it creates for other land protection techniques to be applied” (Arendt 1994: 297). While this type of zoning may be less restrictive, it can still serve the purpose of land preservation. Cluster zoning may also be incentive-based; in return for providing a public good, a developer may be offered an incentive such as increased density or increased floor area ratio (FAR).

Since a public restriction has been placed on the property, the landowner cannot sell the land for nonagricultural uses even when development pressures become significant (Cordes 1999). Thus, because zoning can limit development, even with significant growth pressures and financial incentives, it can be used as a farmland protection and growth management tool at the local level.

Urban growth boundaries and urban service boundaries are not zoning designations, but political designations established in a locality’s comprehensive plan. Since comprehensive plans can designate areas to receive infrastructure extension, such as sewer and water, urban growth boundaries guide decisions about rezoning applications and public infrastructure improvements (American Planning Association 2010). These designations establish boundaries beyond which infrastructure will not be extended and outside of which urban development will not occur. “USBs [urban service boundaries] can be a powerful tool for restricting new development, preserving public goods, minimizing fiscal burdens and negative externalities” (Feiock, Tavares and Lubell 2008: 466). These designations can help localities avoid sprawl and leapfrog development as well as promote mixed use and infill development. They can however result in
higher housing costs because of land scarcity and a limited supply of developable land (Feiock, Tavares and Lubell 2008).

**Incentive-based Policy**

Incentive-based policy instruments involve either incentives or disincentives using monetary or non-monetary resources in exchange for the alteration of behavior (Bengston, Fletcher and Nelson 2003). The literature also refers to these types of tools as market based approaches (Feiock and Taveras). These policies are not mandatory, but may be widely employed based on the incentive offered. And these techniques are thought to be less intrusive than regulatory controls (Feiock and Taveras). Examples include: Right to farm (RTF) laws, agricultural districts, transfer of development rights (TDR), purchase of development rights (PDR), use-value taxation, impact fees, infill development incentives, and historic rehabilitation tax credits.

Incentive zoning is a growth management and land preservation technique that allows developers to build at higher densities in exchange for providing social and environmental amenities to the community. Whereas traditional zoning strives to avoid negative externalities between competing land uses, incentive zoning would produce amenities, such as parks, schools and affordable housing, that would produce positive externalities (Feiock, Tavares and Lubell 2008). “This growth management technique is based on incentives because the price at which the local government buys each amenity is the amount of bonus provided to the developer” (Feiock, Tavares and Lubell 2008: 467).

Similarly, impact fees can be used to manage growth because they shift the cost burden of new infrastructure development to developers (Feiock, Tavares and Lubell 2008). In these
instances, the government does not absorb the cost increases associated with the infrastructure and community facilities necessary to accommodate new development. Lowering impact fees may encourage excessive development and raising the fees may result in more compact development.

Every state currently has some form of tax relief provisions for agricultural land, the most common of which are preferential-assessment statutes (Cordes 1999). These programs assess land at a reduced value when used for agriculture. Deferred taxation programs provide lower assessment for farmland but require partial or total repayment of the tax savings if the land is later converted to other uses (Cordes 1999), thus giving the landowner an incentive to retain the land as farmland. These tools provide financial incentives to farmers to offset potential benefits gained from conceding to development pressures.

Another technique to aid the preservation of agricultural land is right to farm laws (RTF). RTF laws provide some protection to farmers against nuisance complaints, stemming from development that has moved to rural and agricultural areas and gets negatively affected by farming and other activities typical of such areas (Cordes 1999). Zoning is meant to protect nuisance operations from developing in adjacent areas, but rural areas often face great development pressures. Perhaps the best way to minimize conflicts between new residents and the farming community is to keep them physically separated (Arendt 1994). Right to farm laws do not preserve land, but they do provide protection to farmers who want to continue farming in the face of development and growth pressures from urban areas.

Similarly, agricultural districting involves the creation of voluntary agricultural districts that require the land to be used only for agricultural purposes. The creation of agricultural and forestal districts is permitted in the Code of Virginia (Section 15.2-43). As an incentive based
preservation tool, landowners who participate in these districts receive benefits depending on the regulation. “…[O]bservers criticize this approach as conferring too many benefits on farmers without requiring any corresponding restrictions on their ability to convert their land into sprawling low-density residential developments” (Arendt 1994: 291). These districts may help retain land in agriculture, but do not in any way restrict or prevent the development of agricultural land.

The voluntary nature of the aforementioned preservation tools can limit their effectiveness. Cordes (1999: 7) notes that “[s]uch programs play an important role in a comprehensive preservation program, but by themselves will often be ineffective in establishing long-term farmland preservation.” Cordes (1999) further notes that since these voluntary techniques are ineffective in farmland preservation, there is a need for programs that will restrict a landowner’s ability to develop his land through techniques that place decision making authority elsewhere, particularly with the government. However, localities may consider these tools forms of exclusionary zoning, which limits the frequency with which these tools are employed. Thus, preservationists have turned to other voluntary land use control programs such as purchase of development rights (PDR) and compensatory zoning programs such as transfer of development rights (TDR) (Pfeffer and Lapping 1994; Cordes 1999) that also function as growth control mechanisms.

Purchase of development rights programs involve limiting the landowner’s development potential and shifting the cost of preservation to the public by using public funds, from tax revenue or state bonds, or an organization such as a land trust, to purchase the development rights (Cordes 1999; Brabec and Smith 2002). Property owners relinquish the ability to develop their property to more intensive, nonagricultural uses while the cost of preservation is placed on
the public or non-profit organization through the purchase agreement (Cordes 1999). Typically, purchase of development rights programs allow the government, or other entity such as a nonprofit, to purchase the development rights on a piece of land by paying the landowner the difference between the value of the property in its current agricultural state and the value of the property in a developed state. Purchase of development rights programs can be extremely expensive, particularly in states with agricultural zoning ordinances that allow residential developments on small lot sizes (Arendt 1994). PDR programs, however, are effective at retaining farmland as they maintain development restrictions on farmland in perpetuity. But, “[s]ince the tool is voluntary on the part of the landowner, a PDR program does not hold the inherent protection against fragmentation of a TDR program” (Brabec and Smith 2002: 257). This is true because purchase of development rights programs preserve land one lot at a time whereas transfer of development rights programs designate entire areas to be voluntarily preserved. Under most TDR schemes, even when a landowner chooses not to enter into a binding agreement, they are left with few options to develop their land and designated areas remain wholly or largely undeveloped.

The cost of PDR programs makes them unfeasible on a large scale since most localities do not possess sufficient funds to purchase large pieces of land. Transfer of development rights programs circumvent this problem by transferring the cost burden from the local government to private developers. As a farmland preservation tool, TDR can be used to keep the best and most productive land from falling victim to development pressures. As a growth management tool, TDR can direct growth to desired locations to avoid haphazard, sprawling development. Transfer of development rights programs are discussed in more detail below.
Both PDR and TDR are also less likely to falter in changing political climates where strong development pressure might affect other more typical zoning techniques. Furthermore, PDR and TDR programs “…internalize some of the social benefits that fall beyond the normal boundary of the pricing system for agricultural land” (Duke and Aull-Hyde 2002: 132). Thus, certain externalities not accounted for by the market are taken into account in these types of farmland preservation measures. “To the extent economically feasible, PDRs, and if possible, TDRs, should be used for two reasons. First, they admittedly address the perceived unfairness of substantial drops in property value and make preservation more politically acceptable. Second, they also are more likely to be effective in permanently restricting land to agricultural use rather than agricultural zoning” (Cordes 2005: 203). These voluntary land use controls can be vital to land preservation and growth management.

**Background on Transfer of Development Rights Programs**

Transfer of development rights is a technique used for many purposes in the United States. It can be used for landmark preservation, open space preservation, preservation of ecologically fragile resources, a tool to regulate land use, a tool to encourage construction of moderate to low income housing, as a community growth regulatory measure, and to avoid windfalls and wipeouts (increases or decreases in property values because of certain government actions) (Rose 1975). This research will focus solely on the use of TDR as a tool to manage community growth and development and preserve open space.

The primary goals of transfer of development rights programs are the preservation of open space, environmentally sensitive lands, agricultural lands, historic buildings or housing, and the achievement of compact, managed community growth (Lane 1998; Cohen and Preuss 2002;
While these goals may seem contradictory, they are in fact, complementary. Effectively, TDR involves shifting development potential from one area to another, a process Shales (1974) refers to as “…the orderly reallocation of density…” (527). Transfer of development rights programs can help alleviate growth and development pressures by preserving valuable lands and directing growth to areas that can accommodate density increases. “Transfer of development rights’…helps a community plan its growth. The net effect is preservation of environmentally important areas with equitable compensation for owners” (Chavooshian and Norman 1975: 403). Hanly-Forde et al. propose a third fundamental goal which is compensation to landowners who lose or sell their right to develop property, in turn making the goal of preservation not only more politically palatable but also more equitable. Compensation to landowners, however, is an essential element of any TDR program that distinguishes it from other land preservation measures. Since compensation it is not a desired or intended outcome, it will not be considered a fundamental goal.

The inherent compensation mechanism of TDR programs suggests that TDR is an option by which localities can preserve large areas of land at little to no cost to society as no government acquisition is involved (Chavooshian and Norman 1975; Pizor 1978). Other methods of land preservation such as land purchases and low-density zoning can be extremely costly or remove land from the tax base. Transfer of development rights programs cost the government and community little or nothing because they operate a private market exchange of development rights between the sending area, the area a community wants to save and the receiving area, the area designated for growth (Pfeffer and Lapping 2004; Pruetz 2003; Kaplowitz, Machemer and Pruetz 2008). According to Pruetz (2003) TDR programs do not attempt to offset value reductions for one property owner with value increases experienced by the same property owner.
Instead, a proportion of the value created by increased development in receiving areas is the source of compensation to landowners in a sending area who are willing to restrict development on their land in perpetuity.

Transfer of development rights relies on the fact that property rights are not a monolithic, unitary right, but a bundle of rights from which any one right may be separated from the others (Hanly-Forde et al.; American Farmland Trust 2008; Woodbury 1975; Pizor 1978). This bundle of rights can be translated into physical rights, including the right to build, farm and exploit natural resources and other enforceable rights, such as the right to sell or rent the land, subdivide the land, or even grant conservation easements, any of which are separable from the others (Hanly-Forde et al.; Woodbury 1975). Under transfer of development rights, the right to develop land is separated from the other land rights. In lieu of monetary compensation, landowners are granted development rights which they can either use in designated receiving areas or sell, for just compensation, to individuals or developers wishing to increase the scope or intensity of their project, also in receiving areas. “In this way, elected officials are not faced with the unpopular option of reducing the property values of constituents without offering compensation in return. And TDR also avoids total reliance on fees, grants or taxes because development proceeds supply the funding” (Pruetz 2003: 27). If a sending area landowner chooses to use the development rights, they can gain compensation from the more intensive use of property elsewhere. Sending area landowners can also sell their development rights to developers in receiving areas allowing them to increase the scope or intensity of a project, and simultaneously receive compensation for restricting their land rights (Strong, Mendelker and Kelly 1996). Developers benefit from transfer of development rights programs because they are able to avoid or exceed certain zoning regulations and avoid cumbersome, costly, and time-consuming
variance requests (Hanly-Forde et al.). Other purchasers of development rights include local governments that wish to control land prices, design details or restrict growth (Hanly-Forde et al.).

Development in sending zones is either severely limited or completely prohibited. Under TDR, sending area landowners can either convey the title of their land or place it in a conservation easement (Pruetz 2003). In certain instances, the local government or a non-profit may choose to purchase land outright thus gaining full title to the land. If a sending area landowner wants to retain the title to his land, he may choose to place his property under an easement. An easement would restrict development on the land in perpetuity. If an owner who has sold their development rights then sells their land, the new owner inherits the easement. No new development rights accrue with the land. If a property owner places his land in an easement, compensation is granted through the sale of development rights that is equal to the property’s full market value (Pruetz 2003). Effectively, the development value is the cost of buying a conservation easement on the sending site (Pruetz 2003).

Transfer of development rights allocation rates can be based on many factors besides market value. “Many communities allow the sale of one TDR for each dwelling that can be built on the sending site under baseline zoning” (Pruetz 2003: 135). This is also known as the one-to-one transfer ratio. If the sending area has been downzoned, some localities allocate development rights based on the density allowed under the previous zoning. The development potential of the sending area, in the form of development rights, is transferred to the receiving area where property owners and developers are allowed to develop land at designated densities.

The receiving area, or zone of development potential, should have been previously designated by the community and should be suitable to accommodate the desired level of growth
for a given community. It generally is located adjacent to previously existing urban areas, though it can be located anywhere designated by the locality. The receiving area must face development demand for densities that are higher than what is currently allowed by right. “TDR programs generally allow developers to build up to a predetermined density limit, called a TDR threshold, without having to buy TDRs” (Pruetz 2003: 140). If a developer wishes to exceed the threshold, he must purchase the number of development rights stipulated in the TDR ordinance (Pruetz 2003).

*Comprehensive Planning, Zoning and TDR*

Comprehensive plans are an important component in achieving a locality’s growth management and land preservation goals and are thus crucial in the development and implementation of TDR programs. “The comprehensive plan is the foundation for all decision-making in matters involving land use planning and growth management” (American Planning Association 2010: 8). They outline long terms goals, objectives and implementation strategies. Planning is used to account for changes in the locality to ensure that land and resources are being used wisely, people have safe, healthy communities in which to live, future needs have been accounted for and planning has taken into account the most cost-effective measures. Planners play a key role in this process “…because they are charged with developing local land use plans that reflect local interests. Planners must attempt to clearly identify significant local interests and work to incorporate them into local planning initiatives…[and] attempt to articulate a community vision of the future” (Pfeffer and Lapping 1994: 237). Transfer of development rights is a land use tool and is not a substitute for comprehensive planning, but should be used in the context of comprehensive planning and existing zoning within a locality (Hanly-Forde et al., Pfeffer and
Lapping 1994; Pizor 1978). “TDR programs that are created within the context of a comprehensive plan are much more likely to be tailored to the specific political, economic and geographic circumstances of their location” (Lane 1998). Much like comprehensive planning, TDR programs should be developed in combination with the community to ensure their specific needs are met. Consequently, TDR programs work only when they are part of a larger, long-term land use plan that has the commitment of politicians and the community to achieving its goals (Lane 1998).

While comprehensive planning helps a locality plan its long-term growth and development goals, zoning is a tool that can be used to manage growth and development. Existing zoning decrees the permitted or allowable building density or a particular area. Traditional zoning mechanisms, when left to market pressures, result in haphazard development and scattered, non-contiguous parcels of open space and low-density, sprawling developments (Chavooshian and Norman 1975; Woodbury 1975). These inherent problems with conventional zoning have led to the development of more innovative zoning techniques that simultaneously preserve open space and direct growth, such as planned unit developments (PUD). Transfer of development rights, while not explicitly a zoning tool, can be used in conjunction with existing zoning techniques. Others argue, however, that transfer of development rights can be used as a substitute for traditional zoning regulations (Shales 1974). Some zoning regulations are regarded as discriminatory and since TDR can be used to limit or restrict development and growth of a locality, it may also be viewed as discriminatory or exclusionary, particularly if not used in conjunction with comprehensive planning. TDR regulates and constrains growth but also challenges unregulated growth by taking land off the market and rendering it unavailable for
development purposes (Pfeffer and Lapping 1994). Just as it can pose a threat, however, it can also aid this growth mechanism by enabling higher densities and more compact development.

**Factors Influencing the Success of TDR Programs**

A significant amount of research has been conducted on TDR programs in the United States, specifically in areas with highly successful programs, such as Montgomery County, Maryland and the Pinelands in New Jersey. Many of these studies have focused on factors that contribute to program success or lack thereof. The features of successful programs have been derived from relevant TDR literature (e.g. Pizor 1986; Machemer and Kaplowitz 2002; Fulton et al. 2004; Kaplowitz, Machemer and Pruetz 2008; Pruetz and Standridge 2009). While it is clear that there are many factors that can influence the success of a TDR program, drawing on the work of Kaplowitz, Machemer and Pruetz (2008) this research postulates that those factors that can have the greatest effect are under the influence of planners, policy makers and local government officials.

**TDR Bank**

The existence of a TDR bank in successful programs has been supported in the literature (Kaplowitz, Machemer and Pruetz 2008; Machemer and Kaplowitz 2002; Fulton et al. 2004; Lane 1998; Pruetz and Standridge 2009). TDR banks are government entities that use public funds to buy development rights and hold them for resale to developers. Along with providing certain key functions, such as facilitating transactions, promoting the TDR program and providing prospective landowners and developers with information regarding the value of development rights credits, a TDR bank can also provide supportive functions such as marketing.
the program, acting as a facilitator and educator to the community and providing credibility for and confidence in the TDR program.

*Political Foundations*

Strong political foundations can provide the groundwork for communities to initiate and implement successful TDR programs. While this foundation may vary from effective state enabling legislation to more general police power (Machemer and Kaplowitz 2002), without proper legislation in the form of a state or local ordinance, a community may be susceptible to legal challenges. Effective state enabling legislation may be important to establishing clear legal authority but the legislation should be specific enough to provide clear guidance yet broad enough to enable localities to tailor their programs to local circumstances (Lane 1998). In addition, strong political leadership and leadership within stakeholder groups, is necessary for program success (Machemer and Kaplowitz 2002).

*Community Support*

The nature of TDR programs requires community support to encourage both sending area landowners and receiving area developers to participate in the program. Community support is crucial to TDR program success (Machemer and Kaplowitz 2002; Fulton et al. 2004; Pruetz and Standridge 2009). Public support is important for ensuring that requests for exceptions to TDR requirements do not affect the program’s effectiveness (Pruetz and Standridge 2009). The unwavering support of the community and all parties involved is vital to withstand these pressures and ensure the success of any TDR program.
Additionally, TDR programs that operate concurrently with PDR programs are more successful than programs that operate in the absence of PDR programs (Machemer and Kaplowitz 2002; Kaplowitz, Machemer and Pruetz 2008; Pruetz and Standridge 2009). Both of these programs illustrate the community’s commitment to preservation, however, most localities do not possess the necessary funds to use PDR as a land preservation technique to achieve desired preservation goals. Communities with a strong sense of place that can appreciate the benefits of directing growth to receiving areas and preserving sending areas, will have more successful TDR programs (Machemer and Kaplowitz 2002).

*Background Studies and Local Knowledge*

Kaplowitz, Machemer and Pruetz (2008) found a statistically significant relationship between TDR programs that conducted background studies prior to initiating the program and the success of the TDR program. These studies investigate different options and alternatives to TDR programs and represent a commitment of time and resources on the part of the community to establishing a TDR program and achieving desired preservation goals. Knowledge of local land use patterns and demand are vital to the success of a TDR program since there must be demand where TDR will be used (Machemer and Kaplowitz 2002).

*Program Simplicity*

Well structured programs, with clear goals and simple conditions and transfer policies tend to be more successful (Pizor 1986; Kaplowitz and Machemer 2002; Pruetz and Standridge 2009). “A program’s simplicity helps it build support among the diverse groups that are potential
supporters…” (Pruetz and Standridge 2009: 85). Simplicity can not only help build public support, but also encourage participation and balance supply and demand.

**Encouraging Participation and Balancing Supply and Demand**

Demand may not automatically exist in the market for development rights. Planners and policy makers can encourage demand for TDR. TDR programs in and around communities under high growth pressures tend to feature higher demand and preserve a greater number of acres (Machemer and Kaplowitz 2002; Kaplowitz, Machemer and Pruetz 2008). Many TDR programs fail because developers are satisfied with the density they get for free under current zoning regulations. “…[I]t is understandable that landowners are not likely to think they should ‘buy what they can get for free’” (Fulton et al. 2004: 22). Communities that approve upzonings should also require the purchase of development rights. “Regulatory consistency sends the signal that TDR sending area zoning will not change and that bonus densities in receiving areas will only be achieved through TDR participation…” (Machemer and Kalpowitz 2002: 784). Similarly, offering few or no alternatives to participating in TDR programs can also encourage participation in these programs (Pruetz and Standridge 2009).

**Designating and Regulating Sending Areas**

Many areas try to preserve land that is most directly threatened by development. Sending areas must be properly chosen to avoid high transaction costs, too much development pressure, and leapfrog development. “Land under immediate threat of development will typically have a high development value, forcing high TDR allocation rates in an attempt to motivate owner participation” (Fulton et al. 2004: 22-23). Land that is located too close to urbanizing areas may
be susceptible to growth and development pressures. These landowners may be inclined to sell their land directly to developers instead of selling their development rights. In this case, the cost of the transferable development rights will increase greatly to ensure the land is not developed and set an unsustainable precedent for future sales of development rights. If sending areas are poorly chosen, “leapfrog development” may occur, in which a locality preserves land too close to developed areas causing growth to occur beyond the preserved area and extend farther from the city center. Additionally, sending areas need to have strict zoning regulations since the purpose of sending area zoning is to implement the community’s preservation goals (Pruetz and Standridge 2009). Furthermore, sending areas should be strictly zoned and offer few or no alternatives to participating in TDR programs.

*Sustainable and Appropriate Receiving Areas*

Receiving areas should be customized to fit local needs and remain viable (Pruetz and Standridge 2009; Fulton et al. 2004; Machemer and Kaplowitz 2002). Receiving areas should be well sited and prepared for development, including provisions for infrastructure (Pizor 1986). “Ideally, TDRs are transferred from rural areas into cities on the urban fringe, where the infrastructure, employment, shopping, and public services…already exists” (Pruetz and Standridge 2009: 82). If no feasible area currently exists, it is possible for communities to design new receiving areas. “In many cases, communities designate too few receiving areas or the TDR program cannot withstand political opposition from neighbors in receiving areas (Fulton et al. 2004: 22). TDR receiving sites must be feasible from both a planning and political standpoint. The area must be able to accommodate growth but also be defensible by local politicians who
may face backlash from their constituents. Most importantly however, receiving areas should be tailored to local needs, which can be done through proper policy and planning.

It is clear that there are many factors present in successful TDR programs. What is more evident is that none of these factors exists independent of the others. The above list details elements of existing, successful programs, but it also provides insight into factors that can hinder or advance the development and implementation of new programs. Those elements under the influence of planners and policy makers are of particular interest in this study. While it is clear that the program must be designed to meet the needs of the community and local environment (Pizor 1986), many elements of successful programs are those over which planners and policy makers have the most control (Kaplowitz, Machemer and Pruetz 2008). Planners and policy makers can act as educators, facilitators, managers and problem solvers while at the same time, developing policies and programs that achieve goals and encourage mutual understanding and participation in TDR programs. None of these activities, however, occur in a vacuum and the environment in which planning takes place ultimately affects the policies that are adopted. The social, economic and political climate of a locality can have important implications for the adoption of land preservation and growth management tools.

**TDR Obstacles and Limitations**

Although transfer of development rights programs can overcome many of the challenges of other farmland preservation mechanisms, these programs are not without limitations themselves. The TDR literature documents prominent and pressing challenges to developing successful TDR programs and highlights some of the limitations of TDR as a planning tool.
**Regional Planning**

A lack of regional planning can limit the effectiveness of farmland preservation programs, particularly when used as land-use mechanisms in rapidly urbanizing areas (Pfeffer and Lapping 1994). In the absence of regional cooperation, the problem of “leapfrog” development may be more acute. While it is possible for development rights transfers to occur across jurisdictional lines, in the absence of regional planning and regional cooperation transfers are most likely to occur only within a single municipality.

**Program simplicity**

Creating a program that is simple enough to understand but complex enough to be fair can be a major obstacle (Lane 1998). Adequate staff with appropriate knowledge of how TDR programs work is vital to the creation of successful programs. Simple programs can encourage participation, but they may also incite confusion and frustration as well as discourage landowners or developers from participating. Finding a proper balance between simple, easy to understand programs and programs that are complex enough to be fair, can be a challenge.

**Community Acceptance**

As suggested by Rose (1975) TDR programs may evoke a type of intellectual xenophobia, or fear of a stranger, on the part of planners, government officials and the community. Furthermore, developing support among community members to ensure the use of TDR programs can be a challenge. Many communities have difficulty accepting increased density in the receiving area (Lane 1998) because of the effects it may have on the community and neighboring landowners. The effects on adjacent landowners are multifold. “…[L]and-use
controls protect neighboring property owners and residents at the same time they restrict the owner of a particular piece of property” (Strong, Mendelker and Kelly 1996: 15). Residents of receiving areas might be more receptive to the concept of denser development if they were presented with models and drawings of what development under traditional zoning would look like. “…[T]he general public and the marketplace do not value centered development” (Lane 1998). Developing community support can be a challenge, but once established, it can contribute to the success of a program.

*Economics: Developing a Market and Motivating Buyers and Sellers*

The economics behind operating a TDR program can be a challenge. Establishing a local market for development rights gives the development rights value and provides an incentive for their transfer (Woodbury 1975; Strong, Mendelker and Kelly 1996; Lane 1998). Not only do planners have to ensure the existence of a market for development rights, but buyers and sellers must both be motivated to partake in the program. Establishing a fair and just means to allocate development rights to landowners wishing to sell their rights, can be a concern when motivating sellers. Furthermore, developers must be required to purchase development rights in order to build and since their project may be within the scope of current zoning regulations, there is no incentive for them to purchase development rights otherwise (Strong, Mendelker, Kelly 1996).

*Avoiding Legal Challenges*

Avoiding litigation can be an obstacle to successful TDR programs (Lane 1998; Pizor 1978). TDR programs compensate landowners for the sale of their development rights, however a takings claim may arise. The takings clause states that government action cannot deny a
landowner of reasonable economic use of his land. According to Pizor (1978), the accommodation doctrine provides that compensation would only need to be made if the land value fell below its reasonable and beneficial use. However, reasonable and beneficial use has no standard definition in the courts and determining a fair price and just compensation for landowners can be difficult.

Proper Implementation Mechanisms

Proficient planners and a capable, responsible governing body are key to successful TDR programs (Rose 1975). A lack of understanding and support on either side can be severe limitations. Both parties play crucial roles in the development and implementation of TDR programs. Planners can project future market demand as well as designate sites as sending and receiving areas. The governing body must be strong enough to uphold the recommendations made by planners and withstand any political pressure or opposition. “To the extent that either group falters, the program may be jeopardized” (Rose 1975: 20). Thus, without competent planners and a responsible governing body, TDR programs will likely not be successful.

Permanence

While the permanence of TDR may be considered a benefit to protecting open space and farmland in a community or region, some find that it “…limits the future options of a community as societal values and community characteristics shift” (Hanly-Forde et al.). Areas under intense growth pressures may turn to TDR to protect valuable farmland and open space however, they are also limiting any future development and may inadvertently be contributing to leap-frog development and sprawling growth patterns as growth will move farther and farther from the city.
center. The permanence of growth controls and land preservation tools can be beneficial if appropriate sending and receiving areas have been designated.
CHAPTER III – THE VIRGINIA CONTEXT

Agriculture and forestry have historically been extremely important activities in Virginia. Forests and open space can generate income, clean the air and water, and provide recreation and scenic beauty. Currently, forests are the single most important land use in the state, covering 62% of the total land area (Virginia Department of Environmental Quality; Virginia Department of Forestry), followed by agriculture, the second most intensive land use. As of 2007, Virginia had 8,103,925 acres of farmland (Virginia Department of Agriculture and Consumer Services), including 3,274,137 acres of cropland (U.S. Census of Agriculture). According to the Virginia Department of Forestry, two thirds of all forested land in the state is owned by private landowners and 17% is publicly owned in two national forests, seventeen state forests and Shenandoah National Park. Overall, 89% of Virginia’s land consists of either forests or is under agriculture or pasture. Other land use and cover types include wetlands, residential, water, commercial, and transitional land uses (Virginia Department of Environmental Quality).

Agriculture also accounts for a significant amount of the state’s economy. In fact, agriculture is the largest industry in Virginia, accounting for approximately 357,000 jobs and an economic impact of $55 billion annually (Virginia Department of Agriculture and Consumer Services). However, agriculture and forestry related industries combined make up just over 10% of the total employment for the state of Virginia (Rephann 2008). In the period from 1960 to 2007, Virginia lost more than five million acres of farmland (Virginia Department of Agriculture...
and Consumer Services). Forestland is decreasing as well. The Virginia Department of Forestry estimates that since 2001, 64% of the deforested area was cleared for urban development. Loss of land to development between the period 1982-2007 is illustrated in Table 1.

Table 1: Loss of land to development, 1982-2007

<table>
<thead>
<tr>
<th>Agricultural land converted to developed land (acres)</th>
<th>Prime Agricultural Land Converted to Developed Land (acres)¹</th>
<th>Rural land converted to developed land (acres)</th>
<th>Prime rural land converted to developed land (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>462,300</td>
<td>185,800</td>
<td>1,275,400</td>
<td>356,800</td>
</tr>
</tbody>
</table>

Source: Farmland Information Center (2006); Total surface area 27,087,100 acres

Virginia is facing phenomenal growth pressures. According to the U.S. Census Bureau, as of 2010, the population of Virginia was 8,001,024, an increase of 13% from 2000, higher than the national average over the same period (Table 2). As of 2010, an astounding 72.2% of the population of Virginia lived in high-density, urban areas, an increase of 3.3% since 2000 (Virginia Performs). In 1945, there were 211,000 acres of urban land in the commonwealth and by 2007 that number had increased to 1,555,000 acres (U.S. Department of Agriculture 2012).

Although a majority of the population lives in high-density areas, the amount of land consumed by high-density areas makes up only 3.7% of the total land area of the Commonwealth (Virginia Performs). However, in 2010, Virginia had only 2.5 residents per developed acre, down from 3.0 in 1982 (Virginia Performs), indicating less efficient land use patterns and more dispersed, sprawling suburban development. More residents per acre suggests more compact, efficient land use with less land consumed in sprawling, suburban developments.

¹ Prime agricultural land is defined as land with the best physical and chemical characteristics to produce food, feed and oilseed crops and is available for these uses (Farmland Information Center 2007).
Table 2: Population Trends, 2000-2010

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Virginia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>281,421,906</td>
<td>7,078,515</td>
</tr>
<tr>
<td>2010</td>
<td>308,745,538</td>
<td>8,001,024</td>
</tr>
<tr>
<td>% change (2000-2010)</td>
<td>9.70%</td>
<td>13.00%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau – QuickFacts 2010

This growth in population and land consumption has had tremendous impacts on localities around the state. Between the period of 1990-2000, 45 counties, six cities and 45 towns in Virginia had population growth rates of 15% or higher (American Planning Association 2010). Furthermore, there were 12 counties, six cities and 25 towns with populations of at least 20,000 and a growth rate of 5% between 1990 and 2000. These extreme growth pressures led the Commonwealth to mandate Urban Development Area (UDA) requirements. This requirement states that any county or city meeting the requirements mandated by the state must designate at least one Urban Development Area to be included in their comprehensive plan by July 2011 (county) or July 2012 (city). A UDA is an area that is appropriate for higher density development that is near transportation facilities, public service infrastructure and currently developed areas. The UDA must incorporate principles of Traditional Neighborhood Design (TND) including commercial and residential densities specified in the legislation. Finally, the UDA should accommodate growth for at least 10 years, with potential boundary revisions every five years (American Planning Association 2010).

The extreme importance of agriculture and forestry, combined with considerable growth pressures, has also led to a surge in land preservation. The Virginia Department of Conservation and Recreation estimates that 3.74 million acres, or 14.8% of the total land area of Virginia, had been protected as of August 2011. Of this total, the Virginia Outdoors Foundation, an organization dedicated to land conservation, has protected 622,707 acres through conservation easements since 1968 (Virginia Outdoors Foundation 2011). Conservation easements are held by
federal, state, local and private entities. The total acres conserved by these groups are represented in Table 3.

In 2011, a bill was introduced in the House of Representatives to establish the Virginia Farmland Preservation Fund. This fund would receive money from the General Assembly as well as public and private sources and would be used to finance actions of the Office of Farmland Preservation in Virginia established by the General Assembly in 2001 to help reverse the loss of farmland to development. The Office of Farmland Preservation performs many functions including establishing policies and practices to guide local PDR programs and determining sources of funding for localities to purchase agricultural easements. Furthermore, the Office of Farmland Preservation is charged with assisting localities in developing other farmland preservation policies and programs and educating the public about the importance of these programs. To date, the Office of Farmland Preservation has used state matching funds to help protect 1,000 acres of farm and forestland (Virginia Department of Agriculture and Consumer Services). This legislation clearly illustrates that Virginia is strongly dedicated to preserving farmland. While a limited amount of farmland has been protected, this dedication to preservation goals should not go unnoticed.

Table 3: Conservation Lands in Virginia

<table>
<thead>
<tr>
<th>Group</th>
<th>Acres Conserved</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>2,340,510.36</td>
<td>62.59%</td>
</tr>
<tr>
<td>State</td>
<td>1,053,625.88</td>
<td>28.18%</td>
</tr>
<tr>
<td>Local</td>
<td>135,602.33</td>
<td>3.63%</td>
</tr>
<tr>
<td>Private</td>
<td>209,488.46</td>
<td>5.60%</td>
</tr>
<tr>
<td>Totals</td>
<td>3,739,227.02</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: Virginia Department of Recreation and Conservation, 2011
Planning in Virginia

Virginia has a long history of planning that can be traced to the English settlement in Jamestown over four hundred years ago (American Planning Association 2010). In order to achieve planning goals, localities in the state are required by the Code of Virginia to prepare and adopt a comprehensive plan to show the long-range recommendations for general development patterns (Code of Virginia Sec. 15.2-2223; American Planning Association 2010). The Code of Virginia identifies and authorizes four primary tools available to communities in order to carry out and implement local comprehensive plans. These tools include the official map, subdivision regulations, zoning, and capital improvements programs (American Planning Association 2010). There are a number of other tools derived from, or supplementary to, these identified tools, including form based codes, large lot or agricultural zoning, cluster subdivision or zoning and historic district zoning. In addition, the state code authorizes several tools to manage the form and location of growth in localities. These include the 2232 review, urban growth boundaries, special exception permits, density incentives, Traditional Neighborhood Design and New Urbanist developments, and transfer of development rights programs. The 2232 review is required when a project is proposed to construct, establish or authorize a public facility not shown in the comprehensive plan (American Planning Association 2010). The planning commission determines whether the proposed project is a feature shown in the comprehensive plan. Establishing the precedent and purposes for planning in Virginia and understanding how TDR programs work, will set the stage for ascertaining why more localities have not adopted TDR as a land-use tool to help manage and direct growth, ease development pressures, and preserve open space.
Background on TDR in Virginia

The code of Virginia authorizes several tools localities can use to manage the form and location of growth and development. These are of particular importance given current growth pressures in many areas of the state. As a Dillon Rule state, localities in Virginia can undertake only those duties that are expressly granted or necessarily implied. In March of 2005, the Virginia General Assembly enacted a law enabling Zoning Ordinance provisions to allow transfer of development rights under the county manager plan of government. Since 2006, the Code of Virginia has authorized all localities to establish TDR programs (Section 15.2-2316.1-2316.2). Section 15.2-2316.1 defines several terms pertaining to the legislation and section 15.2-2316.2 authorizes localities to establish transfer of development rights programs under certain basic mandatory parameters and optional provisions. The decision to adopt and use this tool is voluntary since its use is not mandated in the code. Since the adoption of the original statute in 2006 it has been amended several times. In 2007, the legislation was amended to allow the transfer of development rights across city-county boundaries with the permission of local governing bodies and approval from the circuit court. Furthermore, the original legislation only allowed for development rights to be severed from one parcel or land and immediately reattached to another parcel of land. In order to make TDR more attractive to localities and developers, the legislation was amended again in 2009. This amendment allowed for the severance of development rights without immediate reattachment to another property as well as local taxation of the severed rights until they are reattached to a parcel of land. Once again, in 2010, the legislation was amended to allow for the development rights permitted to be attached to the receiving areas to be equal to, or greater than, the development rights severed from the sending
area. Currently, Frederick and Arlington Counties are the only two municipalities with legal TDR programs in the state but several other counties are in the process of developing programs.

Under section 15.2-2316.2 of the Code of Virginia, the TDR legislation specifies that no locality may adopt or amend a transfer of development rights ordinance without giving notice and holding a public hearing. Furthermore, localities may not require property owners to transfer development rights as a condition placed on new developments. According to the legislation, prior to any transfer of development rights, a locality must adopt an ordinance based on findings of public benefit, including, but not limited to the conservation or promotion of public health, safety and general welfare. Furthermore, when developing a TDR program, a locality must accomplish several tasks according to the legislation.

All local ordinances must provide for the severance of development rights from the sending property as well as the sale, purchase or exchange of these rights prior to the rights being affixed to a specified receiving property. In addition, sending area development restrictions must be binding to the current property owner as well as future owners in perpetuity. The instruments used to issue and record such TDR exchanges must necessarily identify the development rights being severed as well as the applicable sending and receiving properties. A system for monitoring the severance, ownership, assignment and transfer of development rights must also be established.

Furthermore, a map or other description of designated sending and receiving areas must be provided as well as the identification of any inappropriate receiving areas. The legislation stipulates that localities must periodically amend the comprehensive plan to show designated TDR sending and receiving areas. The minimum acreage of the sending property and the minimum reduction in density on the sending property must also be identified. The development
rights permitted to be attached in the receiving areas should be equal to or greater than the development rights severed from the sending areas. The permitted uses and maximum density in the receiving area should be identified. As well, the infrastructure in the receiving area must be assessed to ensure its ability to accept any density increases, and any plans to provide necessary utility services to designated receiving areas must be provided. Any application submitted to the planning commission must be reviewed for its compliance with the local TDR ordinance and approved transfers will become effective after they have been recorded and a certified copy of the recording has been filed with the local governing body.

There are several optional features that can be written in to TDR ordinances. Transfer of development rights receiving areas can include urban development areas (UDA). Transfer of development rights programs can work in collaboration with urban development areas because these areas have been sited for increased density and growth, including the provision of infrastructure and public facilities. Other optional features include: allowing residential density to be converted to bonus density on the receiving property (increase in residential density means an increase in the square footage of commercial use); severance of development rights from zoned or subdivided properties; the purchase of all or part of the density rights of a sending property; sending properties to generate one or more forms of renewable energy; tax abatement for up to 25 years for the owner of the development rights (Code of Virginia; McRoberts 2010). A final important point for this study is that the legislation stipulates that “[a] county adopting an ordinance pursuant to this article may designate eligible receiving areas in any incorporated town within such county, if the governing body of the town has also amended its zoning ordinance to designate the same areas as eligible to receive density being transferred from sending areas in the county” (Code of Virginia Chapter 573). According to the literature, while possible and
important, the process of interjurisdictional transfers can be an extremely time consuming and cumbersome process.

**Current TDR Programs in Virginia**

The United States has nearly 100 functioning TDR programs in existence. Although legislation was initially passed in 2006 enabling localities in Virginia to establish transfer of development rights programs, only two localities have done so. Frederick County and Arlington County are the only localities in Virginia with legally operating TDR programs.

In April 2010, Frederick County adopted a TDR ordinance. Lawrence (2010) states that the purpose of this was to provide an incentive to preserve land and to direct growth to the UDA. The county had to designate both sending and receiving areas. The sending area was land outside the UDA that was zoned as a rural area. This land lacked sewer service and had to be more than twenty acres in size, as well as have road frontage. One development right was kept for every one hundred acres of land and the land was to exclude easements and un-developable land. Finally, owners of sending area land must be in good standing with the county regarding tax payments. Frederick County’s TDR program has a three-tiered system concerning density bonuses. Receiving areas were to be designated within the existing UDA and provide for public water and sewer systems.

Under the TDR scheme in Frederick County, each transfer must include a Letter of Intent as well as a TDR certificate. Rights may be banked but are subject to taxation by the county. There are as well restrictive deed covenants. Although the enabling legislation does not provide for a bank for development rights, Frederick County has established their own system of banking. Establishing a TDR program created several new tasks for the county including
performing background research to verify where the development rights were coming from and determining the potential overall density to be accommodated in the designated receiving areas.

The 2005 General Assembly’s passage of TDR legislation allowed Arlington County to enact a TDR program though its zoning ordinance. In 2006, the Arlington County Board adopted an amendment to the county’s zoning ordinance, which is the regulating document for the transfer of development rights. In 2008 the County Board approved a TDR policy document outlining the eligible purposes of a sending site, eligible locations of sending and receiving site and the evaluation and calculation of TDRs. Revisions to the policy guidelines were made in 2009. Arlington County’s authority to establish a TDR ordinance, however, falls under the initial 2005 legislation.

The County Board must approve all sending and receiving sites. The County Board will approve the amount of density or other development rights to be transferred and certify sending areas. “TDRs from a Certified Sending site can be used only in conjunction with a special exception site plan application on a proposed Receiving site” (Arlington County - A 2008: 5). Sending locations may be anywhere in the county, however the property owner must be committed to restricting the use or density of his property for various purposes outlined in the ordinance, including: open space, historic preservation, affordable housing, community recreation or community facilities. The amount of density transferred would generally be based on the unused by-right density on the sending site and additional density associated with the TDR program is subject to limitations on the approved receiving site as provided for in the zoning district regulations (Arlington County A 2008). Sending sites may be rezoned to a higher density zoning district if this change is consistent with the County’s General Land Use Plan. This
could increase the amount of density eligible to be transferred. Both sending area owners and receiving area developers are required to record deed restrictions on the sites.

Eligible receiving sites are limited to those located in two designated corridors (Rosslyn-Ballston Corridor and the Jefferson Davis Corridor), but exclude any areas designated in the General Land Use Plan as “low” residential or parcels or portions of parcels that are within 165 feet of R-zoned districts that are planned for “low” residential (Arlington County – A 2008).

“…Receiving sites are limited to those parcels zoned or proposed for a re-zoning to a district that allows for a site plan option” (Arlington County – A 2008: 7). Thus, the transfer of development rights can only occur through a special exception site plan process on the receiving site.

Arlington County’s TDR program is meant to “…preserve important characteristics or amenities of the community” (Arlington County – B 2008: 2). The County Board will consider the appropriateness of the increased density or other development rights as well as the consistency of the site plan with standards in existing county plans and goals. Furthermore, the Board will consider if the TDR approval is consistent with the zoning ordinance, and if public health, safety and general welfare of the community will be adversely affected. Additional density associated with TDRs can exceed the maximum allowable density unless the zoning district has a maximum cap on height or density. Density may also exceed that of the General Land Use Plan as long as the proposed site plan complies with the character of existing plans and relates functionally to existing structures.

Current TDR Legislation: Obstacles and Limitations

In 2007, the Virginia Municipal League (VML) gave a presentation in which concerns with the then current legislation were outlined. Since the presentation, the legislation has been
amended but many of the concerns remain applicable. Richardson (2007) and McRoberts (2010) have confirmed these same concerns and have raised others.

The original legislation (2007) did not provide for the ability to purchase and bank rights for use at a later date or for a larger development project. This raises the issue of who can act as the bank as well as what taxes are applied to rights held over time. The inability of localities to create TDR banks demands that local TDR ordinances be carried out properly the first time around (Richardson 2007). Furthermore, since localities must negotiate and commit to transfers prior to receiving approval from the local government, there can be a significant time delay and uncertainty. This time delay may cause difficulty in determining accurate prices for transferable rights. The most recent version of the legislation however, does not clearly outline this ability, but does not require rights to be immediately reattached to a parcel of land.

Local governments may be unwilling to adopt TDR statutes and may need encouragement. This unwillingness may result from the fact that localities cannot collect cash proffers on land zoned as receiving areas. When local governments realize that the development that occurs using development rights under TDR ordinances is by-right according to local zoning codes, and cash proffers cannot be obtained since no rezoning is involved, they will not adopt such ordinances (Richardson 2007; McRoberts 2010). Furthermore, incentives may be needed to avoid political liabilities. The potential of increased by-right density in receiving areas may result in NIMBY problems for local elected officials (Virginia Municipal League 2007; McRoberts 2010). Thus, TDR may be politically unfeasible without incentives for receiving area residents to participate.

Richardson (2007) states that the complexity of the enabling legislation makes implementation difficult and McRoberts (2010) contends that the outcomes of TDR programs in
Virginia are uncertain. The legislation requires localities to undertake comprehensive planning prior to implementing a TDR program, a requirement Richardson (2007) terms “enormous.” “After struggling to provide adequate politically acceptable areas to serve as receiving zones…communities may well decide to simply pursue good land use planning” (Richardson 2007: 2). However, localities are already required by the Code of Virginia to undertake comprehensive planning thus this requirement should not be considered an insurmountable obstacle. Furthermore, since many localities have adopted UDAs, they have likely already undertaken the task of determining areas appropriate for accommodating density increases. Insufficient demand for additional density in receiving areas may also be an obstacle (McRoberts 2010). Furthermore, Richardson (2007) and McRoberts (2010) both assert that there is a need to balance supply and demand of development rights in order to create a market and encourage participation in TDR programs.

Proposed Solutions

Several proposals have been set forth to mitigate perceived problems with the current TDR enabling legislation in Virginia. The Virginia Municipal League proposes that broad impact fees may be a possible solution to localities not being able to accept cash proffers. Allowing higher by-right density development in new or amended zoning districts under TDR programs could also mitigate issues pertaining to proffers (McRoberts 2010). Under by-right density, no proffers are involved. It is assumed that the zoning district is appropriate for the specified area of the locality. If the receiving area has planned for higher density development, little need exists to build or install new public infrastructure or community facilities, thus there is no need to extract cash or non-cash proffers from developers. However, if higher density is allowed by-right, no
need or incentive exists for developers to purchase development rights. Thus, a certain density could be allowed by-right, with a potential increase to a higher density if the developer purchases development rights. Proper planning and education along with downzoning or upzoning can combat NIMBY problems such as increases in density (McRoberts 2010). Furthermore, a TDR bank could help to balance supply and demand issues and help create a market for development rights.
CHAPTER IV – RESEARCH DESIGN AND METHODOLOGY

The empirical research conducted through this study was used to understand why few localities in Virginia have established and implemented transfer of development rights programs as well as to explore the relationship between planning and politics to better understand how this interaction affects the formation of policy. While many studies have been conducted on factors found in successful TDR programs, as well as obstacles and limitations to successful programs, no such study has been conducted in Virginia specifically. Furthermore, there is a significant amount of public policy literature pertaining to policy instrument selection, community characteristics and local politics, but this research will contribute to knowledge pertaining specifically to the selection of growth management and land preservation tools in localities in Virginia.

Study Area and Sample Selection

As of 2007, the state of Virginia ranked 44th among states in number of governments including counties, cities, municipalities and special district governments (U.S. Census Bureau 2011). However, for the purposes of this research, only localities constituting counties and independent cities were studied because they are the only localities authorized to establish TDR programs within the Commonwealth of Virginia. Virginia contains a total of 95 counties and 39 independent cities (U.S. Census Bureau 2010). While there is conflicting data regarding the
number of cities in the state of Virginia, this study obtained information from the Virginia Municipal League that confirmed there are a total of 39 cities currently in the state. Furthermore, in a Geography Release Note for 2009, the U.S. Census Bureau confirmed that the independent city of Clifton Forge had changed its status to become a town and incorporate into Allegheny County as of July 1, 2001 and was no longer considered as a county equivalent in data reporting (U.S. Census Bureau 2009). Due to the unique municipal structure of Virginia, and its status as a Dillon Rule state, this study has the ability to survey every independent locality authorized to establish a TDR program in order to obtain sufficient data and draw conclusions to advance this research. A sample was not selected because of this unique situation.

Methodology

To better understand why TDR has not been more widely adopted and accepted as a tool for managing growth and preserving land in Virginia, I relied on qualitative methods, consisting of an email survey (Appendix I) built in an online system (Zoomerang). Virginia is particular in that cities are independent from counties. They operate under separate government structures with separate municipal budgets. In general, we can assume that cities have no farmland or rural areas and are entirely built out and counties are less densely populated with abundant open space, but this is not always the case in Virginia. Several counties in Virginia are very densely populated and are almost entirely urban. Thus, this research was conducted on every locality in the state to obtain the most thorough data possible.

The survey was sent to the Planning Director, or person in an equivalent position, in every selected locality (independent city and county, as identified in the study area) in the state. This survey sought to gather information to determine if certain factors are constraining the
development and implementation of TDR programs in Virginia. Several counties in Virginia do not have zoning ordinances (Buchanan, Carroll, Dickenson, Floyd, Patrick, Russell, Tazewell and Wythe) and thus do not have a Planning Director or Zoning Administrator. Although they are unable to implement a TDR program, the survey was sent to these localities in an effort to collect the most complete data possible. The results from these surveys was be tabulated with all other responses.

A survey was chosen as the primary means of data collection for several reasons. It was the fastest and most efficient way for the researcher to contact every locality in the state. Other methods of data collection may be more reliable, but are significantly more time consuming. Furthermore, because of the relatively small number of localities to survey, an email survey allowed the researcher to survey every locality and not limit data collection to a smaller sample. Secondly, a survey allows individuals to provide answers that they may not otherwise feel comfortable giving in person or on the phone. The anonymity provided through an email survey may allow for more accurate data collection. Third, a mix of multiple-choice and open-ended questions will enable the researcher to cross-reference. Finally, since respondents may respond to the survey at their convenience, it is likely that more complete information will be gathered.

Contact information was obtained from the Virginia Association of Counties and the Virginia Municipal League, as it was available and as they were willing to provide. Any supplementary information was obtained by searching websites of the given locality. No personal information was collected from respondents and all contact information will be kept confidential in password-protected files. All responses are presented in aggregate format only and not associated to any identifiable information. Survey respondents were asked to give consent to taking the survey prior to answering any questions. Furthermore, they were informed
that they do not have to answer all questions and that they can stop taking the survey at any time. Any respondent who declined to give consent to taking the survey was automatically redirected to a time-out page and no survey responses were obtained from these individuals.

A test survey was distributed to several practicing planning professionals either in local government planning departments or private planning practices. These professional provided comments and feedback on the survey so that questions could be clarified or asked in a different manner. This feedback led to several questions being changed and more detailed questions being added to the survey.

Prior to the distribution of the survey, a general introductory email was sent identifying who I am and explaining the research and its purpose. Two follow-up emails were then sent to any locality that had not responded after the initial distribution of the survey. These reminder emails resulted in a significant increase in the response rate. A total of 67 complete responses were obtained. Four respondents declined to take the survey and 63 accepted. Three other partial responses were obtained, but the results were not counted in the data analysis. Ultimately, a 47% response rate was obtained through the email survey to be used in the data analysis. Survey questions were developed based on relevant literature and previous research on the factors present in successful TDR programs and obstacles or limitations to successful program development and implementation (Pizor 1986; Machemer and Kaplowitz 2002; Fulton et al. 2004; Kaplowitz, Machemer and Pruetz 2008; Pruetz and Standridge 2009; Hanly-Forde et al.; Rose 1975; Pizor 1978; Lane 1998; Woodbury 1975; Pfeffer and Lapping 1994). These factors were chosen because the aforementioned studies revealed their importance to TDR program development, implementation and success. While not an exhaustive list of factors perhaps, it does reflect common themes and conclusions from the studies. All factors
present in successful TDR programs were mentioned in two or more previous studies. Any obstacle present in just one study was regarded as important for its relationship to the other factors or its compelling nature based on current growth and development pressures facing many localities in Virginia.

As described in more detail in Chapter II, factors present in successful programs include:

- TDR banks
- Strong political foundations
- Community support
- Background studies and knowledge of local conditions
- Simplicity
- Balancing supply and demand to encourage participation
- Appropriate sending area designation and regulation
- Sustainable and appropriate receiving areas

Obstacles to successful program development and implementation include:

- Lack of regional planning
- Simplicity (too simple or too complex)
- Lack of community acceptance
- Difficulty developing a market for development rights
- Potential legal challenges
- Lack of proper implementation mechanisms
- Permanence of easement

These factors were explored through the survey using both open ended and multiple-choice questions. Since these factors have been cited as significant in previous research, this survey
drew upon these findings to derive questions. Furthermore, this survey served to confirm or refute previous findings in terms of their applicability to TDR programs in the Commonwealth of Virginia.

Other survey questions sought to assess goals of the locality’s comprehensive plan relating to growth management and land preservation; type of growth and development pressures facing the locality; level of interest in addressing growth and development pressures; tools that each locality is currently using for farmland preservation and growth management; level of regional cooperation; and general demographics (see Feiock and Taveras). These questions helped inform the discussion pertaining to the relationship between politics and policymaking. I assumed that current land preservation and growth management programs indicated a strong commitment to these goals and environment amenable to achieving these goals. It would follow then, that these communities would be open to the establishment of a TDR program. However, if there were little or no support behind land preservation and growth management programs in a given community, I assumed that the local government has little interest in establishing a TDR program. The survey was also used in part to understand the political environment in which policymaking in Virginia occurs.

As Easton’s (1957) system theory outlines, inputs into the political system are shaped by the environment in which they are created and outputs of the political system become eventual inputs in a self-reinforcing cycle. Thus, the environment, understood in this instance as community characteristics, greatly affects policymaking behavior. The Code of Virginia authorizes the use of several instruments for localities to manage growth and preserve open space, but nearly all are voluntary and some, such as transfer of development rights, are hardly being used. While there is a significant amount of literature outlining factors present in
successful programs as well as obstacles and limitations to TDR program development and implementation, this study also obtained information pertaining to the ideological and theoretical components of growth management and land preservation policy adoption. Thus, while there may be factors which clearly aid or hinder the development of TDR programs, other factors external to program development, may also play a key role in determining which growth management policies are adopted.

Considering public policy research pertaining to growth management controls and community character (Baldassare and Protash 1982; Steel and Lovrich 2000; Feiock and Taveras) this research derived independent variables to be used as proxies for the socioeconomic, political and demographic character of a given locality to predict the use of growth management tools, specifically TDR. These community characteristics make up the environment in which policymaking takes place, as articulated in Easton’s Systems Theory. The independent variables I used were drawn from several sources and include: level of unemployment, affluence/income, race, education, housing occupancy, land conservation, population change, population density and the government structure of each county and independent city in Virginia. I expected that level of unemployment, affluence, race, land preservation, population change and education will all reflect the preferences of citizens regarding growth management controls. These citizen characteristics were obtained from the 2009 American Community Survey, the U.S. Census Bureau, the Virginia Department of Conservation and Recreation. Other public policy research relies less heavily on community sociodemographic characteristics and more on the effect of political structure and institutions in growth management policy decisions (Feiock and Taveras; Feiock 2004; Lubell, Feiock and de la Cruz 2009). Although there is no consensus in the literature about the influence of political structure on growth management policy decisions at the
local level, this study tested the political structure variable with the level of interest a locality has in developing a TDR program. Findings were used to make generalizations about the effects of political structure on growth management policy decisions in Virginia. Form of government was based on the specific government structure of each specific locality. This data was obtained through a survey question.

Dependent variables consist of: whether or not a locality has growth management as a stated goal in their comprehensive plan, whether or not a locality has open space or green space preservation as a stated goal in their comprehensive plan, whether or not a locality has farmland preservation as a stated goal in their comprehensive plan and the presence of a TDR ordinance (if a locality has a TDR program, is in the process of developing a program or is not considering developing a program).

Given the lack of established TDR programs in Virginia, it would seem that some obstacle(s) is/are hindering use of TDR and this research was undertaken to identify and understand these obstacles. Whether the obstacles are practical or ideological, this research based its methodology on previous studies to understand these hindrances and provide policy recommendations to encourage the use of TDR as a growth management and land preservation tool in the Commonwealth of Virginia. According to pragmatic rationality, truth cannot be separated from the context in which it was produced; therefore, contextualizing policymaking decisions was important to this research.

**Data Analysis**

Survey results were tabulated and compiled by Zoomerang, the program used to administer the survey, and downloaded as Excel files. Two different data sets were obtained.
One included coded responses and the other consisted of frequencies represented as percentages based on the number of respondents answering a specific question. Any results not already coded by the survey program were coded by hand. Furthermore, certain questions were used to create new variables to enable easier data analysis. For the data analysis, counties and cities were coded separately to account for any differences in responses. Results were uploaded into SPSS and new variable names were added.

Secondary data were collected from the United States Census Bureau and the Virginia Department of Conservation and Recreation. All data, except median household income, that were not originally represented as percentages from the U.S. Census, were converted into percentages to allow for easier, and more thorough analysis. New variables were calculated using secondary data (population density, population change and per cent protected land). When determining the percent of protected land in a locality, data for total land area were obtained in square miles and converted to acres since the data pertaining to protected land obtained from the Virginia Department of Conservation and Recreation (DCR) was in acres. This enabled me to easily calculate the amount of protected land (federal, state, local, and private holdings) as a percent of a locality’s total land area. Data for any city or county that did not respond to the survey were deleted from the dataset and the remaining data were uploaded into SPSS and combined with the survey data.

Fill in the blank and open-ended answers were analyzed using content analysis techniques (Gaber and Gaber 2007). The goal was to analyze recurring words or phrases and eventually cross-reference the results with the multiple choice questions to distill similarities among overall responses regarding trends and identifiable obstacles to TDR program
development in Virginia. Data obtained and aggregated from these responses have been depicted in tables.

Results were analyzed using different techniques in Excel and SPSS. Most basically, descriptive statistics and frequencies were used to obtain general statistics for various survey questions. Cross tabulations were also performed. Independent sample t-tests were performed to discern significant differences between various socio-economic and demographic characteristics and stated goals in a locality’s comprehensive plan relating to land preservation and growth management. Furthermore, independent sample t-tests were performed to measure significant differences in socio-economic and demographic characteristics among localities with TDR programs, or in the process of developing a TDR program and localities not considering adopting a TDR program at this time. Different levels of significance have been used as is visible in different data sets.

Charts and graphs have also been used to depict some multiple choice and categorical variable results. Results are either represented as a percent out of one-hundred or as a per cent of total responses to a given question. In these instances, responses do not add up to a total of one hundred percent.
CHAPTER V – RESULTS AND DISCUSSION

The research results show that a majority of survey respondents are not considering adopting a TDR ordinance at this time. Survey respondents perceive many obstacles to TDR program development and express a genuine lack of understanding of the benefits TDR can offer their locality. Furthermore, the survey results indicate that a majority of localities in Virginia are heavily reliant on other tools to manage growth and development. However, the tools currently being used in Virginia to manage growth and development are not part of a long-term, comprehensive planning process, but reactive measures made in response to individual development proposals.

Of the 63 localities that responded to the survey, 73% (46) were counties and 27% (17) were cities. Every city and all but four counties have a planning department. The presence of a planning department may indicate skilled and knowledgeable staff and may have the ability to employ more complex planning tools. Furthermore, a planning department means that the locality has a dedicated staff to oversee issues relating to growth management and land preservation, although the staff may oversee more pressing and immediate issues on a daily basis. No respondent was an elected official; all were either appointed or otherwise hired. Table 4 shows how long the respondents have been in their respective positions.
Of the responses received, one county has a legally functioning TDR program, 10 (all counties) are in the process of establishing TDR programs or are considering adopting a TDR program while 52 (35 counties and 17 cities) are not considering adopting a TDR program at this time. Even though one locality has a legally functioning TDR program, the sample is too small to draw any generalizations regarding what type of localities in Virginia adopt TDR programs and why they choose to use this tool. Furthermore, no transactions have occurred to date and the level of success of this program cannot be determined. Thus, the responses of this locality are included with the results obtained from localities thinking of developing a TDR program or that are currently in the process of developing a TDR program. Data was therefore analyzed using two groups: localities with TDR programs, considering adopting a TDR program or in the process of developing a TDR program and localities not considering adopting a TDR program at this time.

In order to understand the environment in which decisions regarding development and implementation of TDR programs is taking place, the survey included questions regarding level of urbanization, development pressures, and goals regarding land preservation and growth management. Answers to these questions, along with data obtained from the U.S. Census, help to contextualize decision-making behavior among the localities. While these answers are subjective, they do not invalidate the results. Truth, according to pragmatic rationality, cannot be dissociated from the context in which it was produced. Therefore all information obtained from
the survey helps to contextualize decision-making behavior but is only as accurate as the context in which it was produced.

Urbanization and Development Pressures

It is likely that counties and cities view their level of urbanization and development pressures differently. Most people would assume that counties are more rural and cities are more urban. However, with current growth trends, many sub-urban and rural areas face greater growth and development pressures than cities, blurring the lines between urban and rural. This is illustrated by the fact that Virginia’s population density is decreasing, indicating that far from being more compact, new developments are more spread out (Virginia Performs).

Among counties that responded to the survey, 27 (59%) respondents characterized their county as rural, 17 (37%) as urban-rural fringe, two (4%) as urbanizing and none were characterized as highly urban. While it is not surprising that a majority of counties are rural, a significant number also indicated that they are urban-rural fringe areas. Such areas are very susceptible to growth and development pressures and are ideal candidates for implementing TDR programs. On that note, four (9%) counties responded that they are facing a high level of development pressure, 16 (35%) responded that they are experiencing a moderate level of development pressure, 19 (41%) responded that they are experiencing a low level of development pressure, three (6%) responded they were experiencing no development pressure and four (9%) responded that they were facing some other level of development pressure.

Not surprisingly, 10 of the 17 (59%) cities characterized themselves as highly urbanized, three (18%) as urbanizing and four (23%) as urban-rural fringe. Every city also indicated that they were not facing high levels of development pressure. In fact, a majority 11 (65%) indicated
that they were experiencing low levels of development pressures, 4 (23%) were experiencing moderate levels of development pressure and two (12%) said they were not facing development pressures. These observations suggest that cities in Virginia face significantly lower development pressures than counties, and that development in Virginia is more land extensive, rather than dense and compact.

**Figure 2: Level of Urbanization**

![Nature of Locality](image)

**Figure 3: Development Pressure**

![Level of Development Pressure](image)
Development pressures in rural areas most likely are generating sprawl based on traditional by-right zoning regulations. These results are consistent with statistics that indicate Virginia is experiencing a high rate of suburban growth and low-density development (Virginia Performs). This means that land is being used inefficiently for development and not preserved. While development must be accommodated, some patterns of land use can effectively accommodate growth and development pressures while preserving open space. Clearly there is a need for greater reliance on growth management and land preservation tools across Virginia, particularly in counties.

**Land Preservation and Growth Management Goals**

Based on the character of localities that responded to the survey, and the development pressure they face, a majority of localities likely employ land preservation or growth management tools to preserve agricultural land and rural character. If, however, a locality does not perceive a current threat of population growth or development pressures, it may not be inclined to employ tools to manage these issues. Similarly, certain localities may want to encourage development to induce economic growth and thus place low priority on preserving land. However, the time to employ land preservation and growth management tools is not when faced with an urgent need, but in a proactive attempt to direct the future of a locality. This will also aid in efficient land development.

When asked about open space and green space preservation a total of 58 (92%) respondents said their locality has open space or green space preservation goals in their comprehensive plans, while only four (6%) did not. Of the respondents with open space and green space preservation as stated goals in their comprehensive plans, 42 (72%) were counties
and 16 (28%) were cities. Similarly, a total of 44 (76%) respondents said that farmland preservation was a stated goal in their comprehensive plan. The overwhelming majority of these represented counties (41 or 71%), not surprisingly. Regarding growth management goals, a total of 46 (79%) localities stated that these were explicitly outlined in their comprehensive plans. These localities included 40 of 46 (87%) counties, but only 6 out of 16 (38%) cities.

This is not surprising given that most cities indicated they were highly urbanized and were facing low levels of development pressures. If a locality feels that it is fully developed, it may not see a need to manage growth. In contrast, a large proportion of Virginia counties are seeking to preserve land and manage growth.

**Socio-economic Characteristics and Comprehensive Plan Goals**

The literature assumes that land preservation and growth management are two sides of the same coin. When land is preserved, it prevents development and when growth is managed properly, it preserves land. Land preservation mechanisms can be used to preserve intrinsic value, ecological habitats, or environmentally sensitive areas, but also to prohibit growth and development. Consequently, this research assumes that the socio-economic characteristics that lead to the use of growth management tools can also lead to the use of land preservation mechanisms.

The tables below compare particular socio-economic characteristics of localities with stated open/green space preservation, farmland preservation or growth management goals in their comprehensive plans with localities that do not have these stated goals. Statistics for the two
groups relate to characteristics of: race, unemployment, poverty, urban and rural\(^2\), median household income, educational attainment, protected land, total occupied housing units, population density and rate of population growth. These characteristics help illustrate the socioeconomic environment in which decisions regarding growth management and land preservation occur in Virginia.

\(^2\) Urban is classified as all territory, population, and housing units located within urbanized areas (UAs) and urban clusters (UCs). These areas represent densely developed territory, consisting of residential, commercial, and other nonresidential urban land uses. In general, these areas feature high population densities and urban land uses resulting in a representation of the “urban footprint.” Rural consists of all territory, population, and housing units located outside UAs and UCs. (U.S. Census Bureau 2010).
Open Space and Green Space Preservation Goals

Table 5: Comparison of average social characteristics in localities with and without open space or green space preservation goals in their comprehensive plan (Q15)

<table>
<thead>
<tr>
<th>% White</th>
<th>73.7</th>
<th>14.478</th>
<th>67.4</th>
<th>32.475</th>
<th>.725</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Black</td>
<td>18.2</td>
<td>13.809</td>
<td>29.5</td>
<td>30.876</td>
<td>.520</td>
</tr>
<tr>
<td>% Hispanic or Latino</td>
<td>4.3</td>
<td>4.288</td>
<td>1.2</td>
<td>1.229</td>
<td>.005*</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>6.2</td>
<td>2.546</td>
<td>6.1</td>
<td>3.964</td>
<td>.953</td>
</tr>
<tr>
<td>% In poverty</td>
<td>12.4</td>
<td>6.623</td>
<td>12.9</td>
<td>3.701</td>
<td>.825</td>
</tr>
<tr>
<td>% Urban</td>
<td>48.2</td>
<td>39.638</td>
<td>35.7</td>
<td>44.559</td>
<td>.620</td>
</tr>
<tr>
<td>% Rural</td>
<td>51.8</td>
<td>39.638</td>
<td>64.3</td>
<td>44.559</td>
<td>.620</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>29,972</td>
<td>8,721.456</td>
<td>25,954</td>
<td>3,787.928</td>
<td>.123</td>
</tr>
<tr>
<td>% Bachelor’s degree (25 years +)</td>
<td>25.1</td>
<td>13.069</td>
<td>15.3</td>
<td>6.652</td>
<td>.049*</td>
</tr>
<tr>
<td>% HS graduate (25 years +)</td>
<td>82.5</td>
<td>6.300</td>
<td>77.0</td>
<td>6.000</td>
<td>.166</td>
</tr>
<tr>
<td>% Land protected</td>
<td>12.4</td>
<td>13.747</td>
<td>23.0</td>
<td>26.038</td>
<td>.477</td>
</tr>
<tr>
<td>% Total occupied housing</td>
<td>88.6</td>
<td>6.049</td>
<td>80.8</td>
<td>14.796</td>
<td>.365</td>
</tr>
<tr>
<td>% Vacant housing</td>
<td>11.4</td>
<td>6.049</td>
<td>19.3</td>
<td>14.796</td>
<td>.365</td>
</tr>
<tr>
<td>Population Density</td>
<td>1.2</td>
<td>2.155</td>
<td>1.1</td>
<td>2.198</td>
<td>.937</td>
</tr>
<tr>
<td>Population change 1990-2010 (%)</td>
<td>35.7</td>
<td>45.3</td>
<td>10.4</td>
<td>24.4</td>
<td>.561</td>
</tr>
<tr>
<td>Renter occupied units</td>
<td>29.3</td>
<td>11.460</td>
<td>27.0</td>
<td>10.739</td>
<td>.707</td>
</tr>
</tbody>
</table>

*=significant at the .05 level
+=significant at the .1 level

An independent samples t-test was conducted to compare mean values of socio-economic characteristics in localities with and without stated open space or green space preservation goals in comprehensive plans among localities around Virginia (Table 5). Significant differences were found at the .05 significance level in the scores for Hispanic/Latino population and percent of the population with a Bachelor’s degree. No other differences between the two groups were
significant even at the 0.1 significance level. Therefore, education and race may be factors in the adoption of open space and green space preservation goals; however, these differences are more likely due to sampling errors and the low number of localities that do not have open space or green space preservation goals. In general, it appears that localities with and without open space and green space preservation goals are more similar than they are different.

No real conclusions can be drawn from these findings. All localities have a nearly equal chance of adopting open space and green space preservation goals. Although the Code of Virginia enables localities to designate open space preservation goals in their comprehensive plans, it is not a mandated requirement. These results may indicate that open space has intrinsic value to the community and is therefore provided as a public good by the government.
**Farmland Preservation Goals**

Table 6: Comparison of average social characteristics in localities with and without farmland preservation goals in their comprehensive plans (Q16)

<table>
<thead>
<tr>
<th></th>
<th>Yes (n=44)</th>
<th>SD</th>
<th>No (n=17)</th>
<th>SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>% White</td>
<td>76.8</td>
<td>13.836</td>
<td>63.5</td>
<td>16.964</td>
<td>.008*</td>
</tr>
<tr>
<td>% Black</td>
<td>17.4</td>
<td>13.561</td>
<td>23.7</td>
<td>18.725</td>
<td>.281</td>
</tr>
<tr>
<td>% Hispanic or Latino</td>
<td>3.0</td>
<td>2.611</td>
<td>7.1</td>
<td>7.620</td>
<td>.044*</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>5.7</td>
<td>1.985</td>
<td>7.5</td>
<td>3.543</td>
<td>.057+</td>
</tr>
<tr>
<td>% In poverty</td>
<td>11.5</td>
<td>4.509</td>
<td>15.4</td>
<td>9.186</td>
<td>.110</td>
</tr>
<tr>
<td>% Urban</td>
<td>28.2</td>
<td>30.090</td>
<td>95.3</td>
<td>7.547</td>
<td>.000*</td>
</tr>
<tr>
<td>% Rural</td>
<td>71.8</td>
<td>30.090</td>
<td>4.7</td>
<td>7.547</td>
<td>.000*</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>29,541</td>
<td>6,348.372</td>
<td>29,885</td>
<td>12,950.246</td>
<td>.981</td>
</tr>
<tr>
<td>% Bachelor’s degree (25 years +)</td>
<td>22.2</td>
<td>10.882</td>
<td>29.6</td>
<td>16.576</td>
<td>.104</td>
</tr>
<tr>
<td>% HS graduate (25 years +)</td>
<td>81.2</td>
<td>5.808</td>
<td>84</td>
<td>7.374</td>
<td>.170</td>
</tr>
<tr>
<td>% Land protected</td>
<td>16.5</td>
<td>15.805</td>
<td>4.1</td>
<td>6.103</td>
<td>.000*</td>
</tr>
<tr>
<td>% Total occupied housing</td>
<td>86.9</td>
<td>7.694</td>
<td>91.1</td>
<td>3.344</td>
<td>.004*</td>
</tr>
<tr>
<td>% Vacant housing</td>
<td>13.1</td>
<td>7.694</td>
<td>8.9</td>
<td>3.344</td>
<td>.004*</td>
</tr>
<tr>
<td>Population Density (per acre)</td>
<td>.39</td>
<td>.849</td>
<td>3.5</td>
<td>2.866</td>
<td>.000*</td>
</tr>
<tr>
<td>Population change 1990-2010 (%)</td>
<td>34.7</td>
<td>30.9</td>
<td>33.2</td>
<td>70.7</td>
<td>.011*</td>
</tr>
<tr>
<td>% Renter occupied units</td>
<td>24.7</td>
<td>7.578</td>
<td>40.9</td>
<td>11.486</td>
<td>.000*</td>
</tr>
</tbody>
</table>

*=significant at the .05 level  
+=significant at the .1 level

An independent samples t-test was conducted to compare socio-economic characteristics of localities with and without stated farmland preservation goals in their comprehensive plans (Table 6). As indicated, there is a significant difference in per cent white population, per cent Hispanic or Latino population, level of urbanity, per cent of land protected, per cent of total...
occupied housing units, rate of population change 1990-2010, population density and pre cent of
renter occupied housing units at the .05 significance level. At the 0.1 significance level, a
significant difference in unemployment also was observed. These results suggest that race,
housing occupancy, population density, amount of protected land, population growth rates,
unemployment and level of urbanity all have an effect on whether or not a locality has stated
farmland preservation goals in their comprehensive plan. Specifically, localities with stated
farmland preservation goals have larger white populations, lower Hispanic or Latino populations,
lower rates of unemployment, are significantly more rural, have a larger per cent of their land
area protected, have lower overall housing occupancy, including fewer renters, have higher
growth rates, and have significantly lower population densities.

These results indicate that more rural, less dense, economically sound, racially
homogenous communities with more protected land are more likely to adopt farmland
preservation goals. Localities without stated farmland preservation goals have larger Hispanic or
Latino populations, are significantly more urban, have less land protected, have higher housing
occupancy rates, including more renters, and have much higher population densities.

It is not surprising that localities with stated farmland preservation goals in their
comprehensive plans would be significantly more rural than localities without stated farmland
preservation goals. In Virginia, a higher level of rurality also correlates with higher per cent
white population. Many urban areas have no farmland to protect and in general, counties tend to
be more rural in nature. This supports the survey finding that a majority of localities with
farmland preservation goals are counties. The comparison of average socio-economic
characteristics also shows that localities with farmland preservation as a stated goal in their
comprehensive plan have a significantly higher percent of land in their locality protected. This
may be due to specific zoning regulations, the employment of agricultural districting, the use of Right-to-Farm laws, or simply because these areas are more dedicated to land preservation. The literature notes that localities committed to land preservation are ideal candidates for adopting TDR programs (Machemer and Kaplowitz 2002; Kaplowitz, Machemer and Pruetz 2008). These localities also tend to have a higher housing vacancy rate and a higher per cent white population. As the literature indicates, sub-urban and rural areas tend to be predominantly white and the findings confirm this information. The housing vacancy rate might be explained by the lower population density, the overbuilding of homes during the housing boom, or out-migration to cities. It could also be explained by the desire of families to build new homes as opposed to living in existing structures. Finally, the difference in vacancy patterns might be explained by a sampling error based on a relatively small sample size. In terms of the difference in renter occupied units, this is easily explained by the fact that a majority of localities with farmland preservation goals in their comprehensive plans are counties. In general, cities have higher rates of renter occupied units than counties.
### Table 7: Comparison of average social characteristics in localities with and without growth management goals in their comprehensive plans (Q 9)

<table>
<thead>
<tr>
<th></th>
<th>Yes (n=46)</th>
<th>SD</th>
<th>No (n=16)</th>
<th>SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>% White</td>
<td>74.7</td>
<td>14.671</td>
<td>70.1</td>
<td>19.156</td>
<td>.393</td>
</tr>
<tr>
<td>% Black</td>
<td>17.7</td>
<td>13.723</td>
<td>22.8</td>
<td>18.790</td>
<td>.331</td>
</tr>
<tr>
<td>% Hispanic or Latino</td>
<td>4.0</td>
<td>5.301</td>
<td>3.9</td>
<td>3.221</td>
<td>.958</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>5.7</td>
<td>2.238</td>
<td>7.5</td>
<td>3.211</td>
<td>.051</td>
</tr>
<tr>
<td>% In poverty</td>
<td>10.9</td>
<td>5.307</td>
<td>17.1</td>
<td>6.882</td>
<td>.004*</td>
</tr>
<tr>
<td>% Urban</td>
<td>38.8</td>
<td>35.790</td>
<td>65.9</td>
<td>44.047</td>
<td>.037*</td>
</tr>
<tr>
<td>% Rural</td>
<td>61.2</td>
<td>35.790</td>
<td>34.1</td>
<td>44.047</td>
<td>.037*</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>30,990</td>
<td>7423.991</td>
<td>24,289</td>
<td>5886.045</td>
<td>.001*</td>
</tr>
<tr>
<td>% Bachelor’s degree (25 years +)</td>
<td>24.7</td>
<td>11.457</td>
<td>20.4</td>
<td>11.242</td>
<td>.195</td>
</tr>
<tr>
<td>% HS graduate (25 years +)</td>
<td>82.5</td>
<td>5.969</td>
<td>80.2</td>
<td>6.442</td>
<td>.219</td>
</tr>
<tr>
<td>% Land protected</td>
<td>15.5</td>
<td>15.451</td>
<td>5.9</td>
<td>9.894</td>
<td>.007*</td>
</tr>
<tr>
<td>% Total occupied housing</td>
<td>87.8</td>
<td>7.692</td>
<td>87.4</td>
<td>6.743</td>
<td>.850</td>
</tr>
<tr>
<td>% Vacant housing</td>
<td>12.2</td>
<td>7.692</td>
<td>12.6</td>
<td>6.743</td>
<td>.850</td>
</tr>
<tr>
<td>Population Density (per acre)</td>
<td>.71</td>
<td>1.519</td>
<td>2.14</td>
<td>2.323</td>
<td>.032*</td>
</tr>
<tr>
<td>Population change 1990-2010 (%)</td>
<td>42.8</td>
<td>47.6</td>
<td>7.4</td>
<td>18.1</td>
<td>.031*</td>
</tr>
<tr>
<td>Renter occupied units</td>
<td>25.8</td>
<td>8.646</td>
<td>37.1</td>
<td>14.037</td>
<td>.007*</td>
</tr>
</tbody>
</table>

* = significant at the .05 level  
+ = significant at the .1 level

An independent samples t-test was also conducted to compare the socio-economic characteristics of localities with and without stated growth management goals in their comprehensive plans (Table 7). There was a significant difference at the 0.05 significance level in the scores for renter occupied housing units, rate of population change 1990-2010, population...
density, percent of protected land, median household income, level of urbanity, and percent of the population in poverty. At the 0.1 significance level, difference in unemployment is also significant. These results suggest that economics and population growth have an effect on whether or not a locality adopts growth management goals. Specifically, localities with stated growth management goals in their comprehensive plans have fewer renter occupied housing units, a significantly larger rate of population growth between 1990 and 2010, much lower population densities, a higher percentage of protected land in their locality, higher median household incomes, are more rural, have lower levels of poverty and lower levels of unemployment. Therefore, localities with stated growth management goals in their comprehensive plans are less dense, more rural areas with higher population growth rates. Furthermore, these localities are in general, better off economically as they reveal higher median incomes, lower levels of poverty and lower levels of unemployment. These areas also show a dedication to land preservation as they have a significantly higher percent of the land area of their locality protected.

These findings are consistent with the literature, which indicates that localities committed to growth management tend to be more affluent and have lower rates of poverty and unemployment. Although the literature also suggests that education is a factor, this research did not reveal such a finding. Furthermore, this research does not support the claim in the literature that racially homogenous communities are more likely to adopt growth management tools. This may suggest either a sampling error or that certain socioeconomic factors are not as important in Virginia as they may be in other areas of the country. An interesting finding is that localities committed to growth management also seem to have a significantly higher percentage of their land protected through conservation easements, or through federal, state, local or non-profit
holdings. This finding suggests that land preservation and growth management are complementary goals and that localities seeking to manage growth are also concerned with protecting land. Furthermore, it could indicate that the presence of protected land serves a dual purpose of managing growth.

**Growth Management and Land Preservation Tools**

*Commonly Used Tools for Farmland Preservation*

As has been noted, a majority of localities reported farmland preservation as a stated goal in their comprehensive plan. Respondents were asked to indicate all of the tools they employ to preserve farmland in their locality. The results show that many localities employ more than one method of farmland preservation. The tools most commonly used are: agricultural zoning (48 – 76%), preferential taxation or tax relief programs (37 – 59%), agricultural districts (26 – 41%), right-to-farm laws (15 – 24%), PDR (14 – 22%), or other (8 – 13%) (Figure 4). In fourteen (22%) localities, no farmland preservation tools are employed.
Respondents were also asked to rate the importance of each of the tools used for farmland preservation in their locality (low, moderate, high, not sure or N/A). The greatest importance was placed on agricultural zoning, preferential taxation/tax relief programs and agricultural districts (Figure 5). These were also the top three most commonly used farmland preservation tools among localities in Virginia. A majority of respondents were either unsure of how important various farmland preservation tools were in their locality or did not employ farmland preservation tools.
Commonly Used Tools for Growth Management

A majority of respondents, particularly those representing counties, also indicated that growth management was a stated goal in their comprehensive plans. The Code of Virginia authorizes many tools that can be used to manage/deal with growth pressures in localities around the state and this research sought to find out how they were doing so. Survey respondents were asked to indicate which tools were employed by their locality to manage growth. Results are as follows: special exception permits/conditional use permits (52 – 83%), New Urbanism/Traditional Neighborhood Design (25 – 40%), 2232 review (22 – 35%), density incentives (21 – 33%), urban growth boundaries (16 – 25%), transfer of development rights (1 – 2%), other (16 – 25%) (Figure 6). Another seven (11%) respondents answered that no tools were employed to manage growth in their locality.
Interestingly, though not surprisingly, an overwhelming majority of localities employ special exception or conditional use permits to manage growth. According to the American Planning Association (2010), nearly every locality authorizes the use of special exception permits and many employ them on a frequent basis. Special exception uses are considered to have a greater impact on neighboring properties or the public than uses permitted by-right in the zoning district. Uses classified as special exceptions may have separate and specialized conditions imposed on them by the locality to mitigate any potentially adverse impacts. Thus, the impacts of growth can be mitigated through conditions placed on the individual developments by the governing body.

Managing growth through the use of special exception/conditional use permits is problematic because, far from being a proactive measure taken to manage growth and development, they are reactive measures made in response to a development proposal. This method of growth management not only seems to be difficult but also extremely inefficient, both in terms of time and financial resources.
Importance of Growth Management Tools

Of the tools used to manage growth in Virginia, special exception/conditional use permits were the most important, as they ranked most favorably in both the moderate importance and high importance categories (Figure 7). Also of high importance to localities were urban growth boundaries, New Urbanism/Traditional Neighborhood Design (TND) and other growth management tools. However, more respondents felt that New Urbanism/Traditional Neighborhood Design (TND) and urban growth boundaries were of low importance in managing growth. Other tools commonly ranked in the low importance category were density incentives, 2232 review and transfer of development rights. A majority of respondents seemed unsure of the importance of various tools to manage growth in their locality. Every tool, except special exception/conditional use permits ranked highest in the not sure/N/A category. These results
demonstrate the overwhelming importance of special exception permits as the growth management tool of choice among Virginia localities.

**Figure 7: Importance of Growth Management Tools**

A reliance on special exception permits to manage growth is problematic since permits are approved as development proposals are presented. Special exception permits are not part of a comprehensive plan and do not help outline the nature of growth and development patterns in a locality. Thus, this method for managing growth will likely prove to be ineffective in the long term.

*Managing the Fiscal Impacts of Growth*

While managing growth and preserving farmland and open space are demonstrable goals, understanding how localities manage the fiscal impacts of these goals is also important. A majority (61%) of respondents said they use conditional zoning or cash proffers to manage the financial impacts of growth, far more than any other tool (Figure 8). Conditional zoning can be
used only if a rezoning is required for development and not if the land is already zoned for development, unless an application for greater intensity has been submitted by the landowner (American Planning Association 2010). Thus, cash proffers cannot be assessed for by-right development.

Both special exception/conditional use permits, as well as conditional zoning/cash proffers, are reactive measures to growth. Reactive measures can take planning only so far. Without a proactive approach, growth and development will continue to be haphazard and consume valuable resources.

**Figure 8: Percent of Respondents Using Tools to Manage the Fiscal Impacts of Growth**

*Importance of Tools to Manage Fiscal Impacts of Growth*

Managing the fiscal impacts of growth is of extreme importance. While many tools to manage growth cost both the developer and the locality money, others can be executed at little to no cost to the community. The results of the survey indicate that localities place the highest
importance on conditional zoning/cash proffers to manage the fiscal impacts of growth. This is no surprise given that a majority of localities use this tool to manage the fiscal impacts of growth. However, in general, respondents seem unsure of the importance placed on various tools used to manage the fiscal impacts of growth (Figure 9).

Figure 9: Importance of Tools to Manage Fiscal Impacts of Growth

The Virginia Municipal League (2007) has suggested that broad impact fees may be a suitable substitute for the extraction of proffers. Currently, however, impact fees are hardly being used and are of little importance. It could be used more frequently, but does not, in any event, hold the locality responsible for proper planning.

Support for Open Space Preservation, Farmland Preservation and Growth Management Tools

To better understand the environment in which decisions regarding growth management are made, I asked respondents to rate the level of support for open space preservation, farmland
preservation or growth management goals by certain stakeholder groups. These included: county department heads, county commission/legislature, county manager, city government officials, neighborhood organizations, environmental groups, real estate developers, homeowners associations, local businesses, the media and the general public. Possible responses were: strongly oppose, oppose, neutral, support, strongly support, not sure or N/A. Based on the responses received, it appears that in general, respondents are not clear on how various stakeholder groups regard their locality’s land preservation and growth management goals. I had hoped this question would yield more information on the views of various groups regarding these important comprehensive plan goals. This also would have helped reveal the environment in which growth management decisions are taking place.

Regarding growth management goals, a majority of respondents noted that most groups were either neutral or supportive. However, several respondents noted that real estate developers are opposed to their locality’s growth management goals. Most respondents feel the general public fall in the “support” category and that county department heads, county commission/legislature, county manager and environmental groups lie in the “strongly support” category.

Regarding farmland and open space preservation goals, respondents noted that most groups are neutral, supportive or strongly supportive. Environmental groups were among the most supportive groups and the general public was viewed as supportive of farmland/open space preservation goals. Other groups reported to be supportive of farmland/open space preservation goals include: county department heads, county commission/legislature, county manager, city government officials and environmental groups.
Localities With a TDR Program or In the Process/Considering a TDR Program

Since transfer of development rights programs can be used for many purposes, I sought to understand why localities in Virginia are interested in TDR. The reasons ascertained for adopting or considering this tool relate to two main issues. These include: a) farmland, agricultural or rural preservation (4) or b) because it is a stated goal in their comprehensive plan and could be used for growth management (5) (Table 8). Two respondents noted that compensation is an important aspect as it would maintain undeveloped land and support rural landowners in the event that downzoning occurred. One respondent also commented that his locality was considering adopting a TDR program to promote active farming in their locality. One locality commented that when development pressures were strong several years ago, the possibility of designating viable sending and receiving areas was high; however, with the slower development market and a lack of model programs in the state, they have stopped work on their draft ordinance for the time being. Finally, one respondent noted that TDR could be used both to promote rural preservation and compact, higher-density development in designated growth areas.

Table 8: Reasons for considering adopting a TDR program (Q44)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number of Responses³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmland, rural or agricultural preservation</td>
<td>4</td>
</tr>
<tr>
<td>Goal in comprehensive plan</td>
<td>5</td>
</tr>
<tr>
<td>Compensate landowners</td>
<td>2</td>
</tr>
<tr>
<td>Promote farming</td>
<td>1</td>
</tr>
<tr>
<td>Compact, higher-density development in designated areas</td>
<td>1</td>
</tr>
<tr>
<td>Development interests</td>
<td>1</td>
</tr>
</tbody>
</table>

³ Number of responses do not add up to number of respondents because respondents gave multiple and detailed answers.
In these counties, the development of a TDR program was initiated most frequently by the planning commission or board of supervisors (5), followed by the planning director (3) or for some other reason, including that it is a stated goal in the comprehensive plan or initiation by some combination of stakeholders including citizens, the EDA, planning commission, non-profit organization, and the county board (4). In only one instance were citizens an impetus in the initiation of a TDR ordinance.

**Stakeholder Pressure and Initiation of TDR Program**

Survey respondents also were asked if there was any pressure from various stakeholders to develop a TDR program and about their level of interest in such a program. Results are summarized in Table 9.

All respondents but one indicated that there was pressure from rural landowners to develop a TDR program. The level of interest of rural landowners in developing a TDR program was reported to be high (1), moderate (3) and low (7). Pressure to establish a TDR program most often came from developers and elected officials. In two counties, there was pressure from developers to establish a program while in seven there was no pressure from developers. Some said their level of interest was moderate (4) or low (7). Two counties reported pressure to develop a TDR program from elected officials with a moderate (5) to low (6) level of interest.
Table 9: Pressure and Level of Interest from Stakeholders in Localities with a TDR Program or Considering Adopting a TDR Program

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Level of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Rural Landowners</td>
<td>1</td>
</tr>
<tr>
<td>Developers</td>
<td>2</td>
</tr>
<tr>
<td>Elected Officials</td>
<td>2</td>
</tr>
</tbody>
</table>

These results indicate that there is little pressure from stakeholders to develop a TDR program. According to the literature, a TDR program must have the support of the community and elected officials to be successful. Stakeholder groups in Virginia indicate a low to moderate level of interest and this may play a key role in the success of a TDR program. If there no interest at all, a TDR program will not be successful as stakeholders will most likely not participate. Interest in a TDR program indicates that stakeholders are open to participating in the program but may need support or encouragement.

Background Study

Among localities with a TDR program, in the process of developing a TDR program, or considering adopting one, six stated they had conducted background studies on the feasibility of a TDR program while three responded that they had not done so. The literature notes that background studies are crucial to the success of TDR programs; counties that conducted background studies may have a higher chance of success by tailoring their TDR program to the needs of the community. Localities considering a TDR program may not have conducted a background study, but are advised to do so to increase the likelihood of program success.
Biggest Obstacles to Developing and Implementing a TDR Program

Survey participants were asked what were or are the biggest obstacles to developing a TDR program in their locality. Table 10 shows an aggregate summary of the responses received and the frequency of each response.

Table 10: Biggest obstacles to developing a TDR program (Q53)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentives (monetary, bonus density)</td>
<td>2</td>
</tr>
<tr>
<td>Slow residential development demand</td>
<td>1</td>
</tr>
<tr>
<td>Lack of model TDR program in the state</td>
<td>2</td>
</tr>
<tr>
<td>Staffing concerns</td>
<td>2</td>
</tr>
<tr>
<td>Defining and supporting sending areas</td>
<td>1</td>
</tr>
<tr>
<td>Defining, supporting, accommodating growth in receiving area</td>
<td>3</td>
</tr>
<tr>
<td>Still researching</td>
<td>1</td>
</tr>
<tr>
<td>Ability to collect proffers on new units vs. ease of by-right development</td>
<td>1</td>
</tr>
<tr>
<td>Public acceptance or support</td>
<td>3</td>
</tr>
</tbody>
</table>

Defining, supporting and accommodating growth in receiving areas was the main concern. This relates to the other most important response, which was public acceptance or support. One respondent noted that “[w]hile many residents support rural preservation initiatives, many living within designated growth areas so not support high-density development in their backyards.” This can cause NIMBY problems and public and political concern. Of particular interest in this regard, as one respondent noted, was that since the increased density would be allowed by-right, no public hearing would occur prior to the increased development.

4 Number of responses do not add up to number of respondents because respondents gave multiple and detailed answers.
Other stated obstacles to developing a TDR program include: slow residential development demand, staffing concerns (other priorities, no money to hire a consultant), incentives (either financial or determining an appropriate transfer ratio), the trade off between the ease of by-right zoning versus the ability to collect proffers on new developments (that involve rezonings), defining and sustaining sending areas, and a lack of functioning or model programs in Virginia. Despite the small number of responses received, these responses do point to a variety of obstacles facing localities developing TDR program in Virginia. It is clear, however, that some factors are paramount in hindering the development of TDR programs, even given the small sample. Since every locality in the state is different in terms of socioeconomic characteristics, land area, growth and development pressures, and political institutions, every obstacle should be considered and addressed individually in each locality.

Fewer respondents gave answers on what were or are the biggest obstacles to implementing a TDR program in their locality, but these included: a need for additional staff to implement and maintain the program, citizen and political support, lack of development demand and financial concerns.

**Localities Not Considering Establishing a TDR Program**

A majority of respondents (83%) said that they were not thinking of developing a TDR program. These responses will help ascertain reason why localities in Virginia are not considering adopting a TDR program. Table 11 shows an aggregate list of responses. The top response was simply that there was no need. Some respondents noted only that there was no need for a TDR program in their locality. Other respondents elaborated on the lack of need by stating that their locality was fully developed or fully built out (urban areas). Many respondents felt that
because of low or no development demand, pressure or activity in their locality, a TDR program would be useless. One respondent noted, “…at this time, development pressure has significantly dropped off, and the current governing body is more development than preservation minded,” even reducing support for current preservation programs. Others felt there was no need for a TDR program because they were successfully using or considering other tools to manage growth and preserve land. Some respondents noted that they had experienced success with voluntary easements, tax credits or a PDR program, thus rendering a TDR program unnecessary.

Several respondents also noted that there was no demand, pressure, interest or support from stakeholders in their locality. One respondent noted that this was due to the existence of proffered rezonings. Another noted that there is no group pushing the development of a TDR program and that because there is little residential development, developers can satisfy demand with the allowed density under current zoning and are not inclined to pay an additional expense for an increase in density. Yet another noted this was due to the economy and lack of development. Other major concerns were staffing issues and other staff priorities, economic reasons, and the view that TDR is an abstract, cumbersome and complicated process whereby the benefits are difficult to ascertain and explain. Some respondents noted, “[t]he whole concept of sending and receiving areas is too abstract and difficult to explain the benefits” and “[w]e do not truly understand the benefit of TDRs.”

As is evidenced by these responses, there are many interconnected reasons as to why localities in Virginia are not considering adopting TDR programs at this time.
Table 11: Reasons for not considering adopting a TDR program (Q56)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number of Responses&lt;sup&gt;5&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>No need</td>
<td></td>
</tr>
<tr>
<td>No need only</td>
<td>7</td>
</tr>
<tr>
<td>No need – fully developed</td>
<td>5</td>
</tr>
<tr>
<td>No need – considering/using other tools</td>
<td>5</td>
</tr>
<tr>
<td>No need – low/no development pressure/activity/demand</td>
<td>14</td>
</tr>
<tr>
<td>No need – low population growth</td>
<td>2</td>
</tr>
<tr>
<td>No demand/pressure/interest/support from Board of Supervisors, politicians, citizens</td>
<td>10</td>
</tr>
<tr>
<td>Staffing concerns and other priorities</td>
<td>8</td>
</tr>
<tr>
<td>Cumbersome/complicated/abstract/cannot explain benefits</td>
<td>5</td>
</tr>
<tr>
<td>Economic reasons (want development)</td>
<td>4</td>
</tr>
<tr>
<td>No viable receiving area</td>
<td>3</td>
</tr>
<tr>
<td>Current zoning does not allow for determination of development rights</td>
<td>2</td>
</tr>
<tr>
<td>Budgetary issues</td>
<td>2</td>
</tr>
<tr>
<td>Waiting for a successful program in Virginia</td>
<td>1</td>
</tr>
<tr>
<td>Receiving area already zoned for high density development</td>
<td>1</td>
</tr>
<tr>
<td>No market or support for development rights</td>
<td>1</td>
</tr>
<tr>
<td>Under discussion</td>
<td>1</td>
</tr>
<tr>
<td>Not being discussed</td>
<td>1</td>
</tr>
</tbody>
</table>

Background Study

Of localities not considering a TDR program, 26 (50%) said that they had considered the possibility of a program and 26 (50%) said that they had not. However, only one respondent said their locality had conducted a background feasibility study. A majority (32 or 62%) of

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<sup>5</sup> Number of responses do not add up to number of respondents because respondents gave multiple and detailed answers.
respondents said they had not considered and not ruled out a TDR program and only 9 (17%) said they had ruled it out for similar reasons as why TDR programs are not being considered. Since many localities have not considered and ruled out the use of a TDR program, there is the possibility that with sufficient education, resources, and help, some localities may consider using this tool.

Stakeholder Pressure and Initiation of TDR Program

To understand the environment in which decisions regarding the adoption of TDR ordinances are taking place, I sought to discern the amount of pressure and level of interest expressed among various stakeholder groups (Table 12).

Table 12: Pressure and Level of Interest from Stakeholders in Localities not Considering Adopting a TDR Program

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Level of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Rural Landowners</td>
<td>0</td>
</tr>
<tr>
<td>Developers</td>
<td>0</td>
</tr>
<tr>
<td>Elected Officials</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Totals may differ because questions were not mandatory.

Unlike localities that have adopted TDR ordinances or are considering/in the process of adopting such ordinances, localities not considering TDR ordinances have seen no stakeholder pressure to do so. Furthermore, in a majority of instances, stakeholder groups have expressed no interest and if any interest was expressed, it seems negligible.
Socio-Economic Characteristics and TDR Program Adoption

While my study sought to understand actual, identifiable obstacles to the development and implementation of TDR programs in Virginia, the literature indicates that certain socio-economic characteristics of localities may influence decisions to adopt growth management and land preservation tools. These characteristics in part make up the environment in which Easton’s System Theory operates. Thus, they are important when considering why certain tools are not being used.

Table 13 shows a comparison of select socio-economic characteristics among localities with TDR programs/in the process of adopting TDR programs/considering adopting TDR programs (“yes”), and localities that are not considering adopting a TDR program at this time (“no”).
Table 13: Comparison of average social characteristics in localities considering, in the process of adopting or with a TDR program and localities not considering a TDR program

<table>
<thead>
<tr>
<th></th>
<th>Yes-∞ (n=11)</th>
<th>SD</th>
<th>No (n=52)</th>
<th>SD</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>% White</td>
<td>75.8</td>
<td>8.508</td>
<td>73.0</td>
<td>16.947</td>
<td>.434</td>
</tr>
<tr>
<td>% Black</td>
<td>16.1</td>
<td>9.306</td>
<td>19.4</td>
<td>16.164</td>
<td>.377</td>
</tr>
<tr>
<td>% Hispanic or Latino</td>
<td>4.6</td>
<td>2.535</td>
<td>3.9</td>
<td>5.188</td>
<td>.525</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>5.1</td>
<td>1.235</td>
<td>6.4</td>
<td>2.760</td>
<td>.022*</td>
</tr>
<tr>
<td>% In poverty</td>
<td>7.7</td>
<td>2.344</td>
<td>13.4</td>
<td>6.471</td>
<td>.000*</td>
</tr>
<tr>
<td>% Urban</td>
<td>44.7</td>
<td>29.675</td>
<td>47.1</td>
<td>41.880</td>
<td>.825</td>
</tr>
<tr>
<td>% Rural</td>
<td>55.3</td>
<td>29.675</td>
<td>52.9</td>
<td>41.880</td>
<td>.825</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>34,217</td>
<td>4474.752</td>
<td>28,797</td>
<td>8829.652</td>
<td>.006*</td>
</tr>
<tr>
<td>% Bachelor’s degree (25 years +)</td>
<td>30.2</td>
<td>11.206</td>
<td>23.1</td>
<td>12.934</td>
<td>.084*</td>
</tr>
<tr>
<td>% HS graduate (25 years +)</td>
<td>85.3</td>
<td>5.798</td>
<td>81.5</td>
<td>6.289</td>
<td>.070*</td>
</tr>
<tr>
<td>% Land protected</td>
<td>12.8</td>
<td>11.797</td>
<td>12.9</td>
<td>15.325</td>
<td>.980</td>
</tr>
<tr>
<td>% Total occupied housing</td>
<td>90.0</td>
<td>6.68</td>
<td>87.4</td>
<td>7.493</td>
<td>.259</td>
</tr>
<tr>
<td>% Vacant housing</td>
<td>10</td>
<td>6.678</td>
<td>12.7</td>
<td>7.493</td>
<td>.259</td>
</tr>
<tr>
<td>Population Density (per acre)</td>
<td>.40</td>
<td>.348</td>
<td>1.4</td>
<td>2.302</td>
<td>.005*</td>
</tr>
<tr>
<td>Population change 1990-2010 (%)</td>
<td>67.7</td>
<td>36.6</td>
<td>26.4</td>
<td>42.7</td>
<td>.623</td>
</tr>
<tr>
<td>Renter occupied units</td>
<td>22.0</td>
<td>5.568</td>
<td>30.4</td>
<td>11.776</td>
<td>.001*</td>
</tr>
</tbody>
</table>

∞=all counties with a TDR program, in the process of adopting a TDR program or considering adopting a TDR program
* = significant at the .05 level
+=significant at the .1 level

While there are substantial differences among localities on certain socioeconomic and demographic characteristics, only some are statistically significant based on an independent samples t-test (Table 13). A significant difference at the .05 significance level between renter occupied housing units, population density, median household income, poverty, and
unemployment. These results suggest that lower per cent of renter occupied housing units, a lower population density, higher median household income, lower per cent of the population in poverty and a lower rate of unemployment, suggest an increased likelihood of a locality adopting a TDR program. Poverty, unemployment and median household income are correlated variables, which explains why they all are statistically significant. At the 0.1 significance level, educational attainment also is seen to have an effect on the adoption of TDR. Therefore, localities with higher levels of educational attainment are more likely to adopt TDR programs. Other characteristics such as race, level of urbanity and occupied housing units have no statistically significant differences, though they may have notable differences.

The literature states that localities pursuing growth management goals are often more racially homogenous, more affluent, have lower rates of unemployment and higher levels of educational attainment. Although this research cannot confirm that localities pursuing growth management goals are more racially homogenous, it does suggest that these areas are more affluent, have lower rates of unemployment and higher levels of educational attainment.

These findings help corroborate survey responses that indicated many localities do not see a need for TDR programs. Areas that are more rural frequently have farmland preservation and growth management goals and feel more development pressures than urban areas. This commitment to land preservation and growth management could explain why less dense areas are more commonly considering adopting TDR programs. Furthermore, the percentage of land protected is almost equal among all localities. This may indicate that other tools are being used successfully, and confirm the survey finding that there is no need for TDR. Localities with land preservation and growth management goals may already be employing appropriate techniques to meet their goals. Furthermore, many survey respondents in urban areas noted that they had no
need for a TDR program because they were fully developed or had no viable sending or receiving areas. This also explains why areas considering TDR programs are more rural in nature.

Similarly, if localities currently have a high housing vacancy rate, they may not be experiencing development pressures or development demand. In localities not considering adopting TDR programs, there seems to be a higher rate of poverty and unemployment and lower median household incomes, which supports the finding that there are economic reasons for not adopting a TDR program, such as encouraging economic investments and encouraging growth and development. Localities with high unemployment commonly do not want to restrict growth and development. Areas with strong economies may be more inclined to adopt growth management tools to exclude certain types of development from their community. Since growth management tools may be viewed as exclusionary, localities that are better off financially may have more flexibility in the types of tools they use. TDR however, does not have to be exclusionary, and can be used to address multiple concerns within a municipality.

**Coordination Among Municipalities**

As has been previously stated, Virginia has a unique political situation wherein cities and counties operate independently of each other. Among survey respondents, 34 (54%) said they have a low level of coordination with their neighboring localities regarding comprehensive plan goals and implementation, 12 (19%) responded that they have a moderate level of coordination, 11 (17%) responded that they have no level of coordination and only five (8%) feel that they have a high level of coordination with neighboring localities with comprehensive plan goals and implementation (Figure 10).
Since many cities in Virginia are fully developed and have little open space, it would be advantageous for cities and neighboring counties to cooperate in using TDR. Cities can provide the receiving areas while counties can contain the sending areas. Directing growth to urban areas that have the ability to accommodate increased density makes sense, not only from a land preservation and environmental perspective, but also from a financial perspective, because building, infrastructure, and community service costs will be lower. Interjurisdictional transfers not only make sense but are also allowed under the TDR legislation. This would require a high level of collaboration among localities, but may be important for managing growth and preserving land in Virginia.

Another potential option to accommodate growth pressures are UDAs. Among survey respondents, 48% said their locality is required to have a UDA while 52% are not. Of the localities required to have a UDA, 83% are counties. Furthermore, 51% of survey respondents said their locality had at least one UDA and 49% said their locality did not. Of localities with at least one UDA, 84% are counties. Given that a significant number of localities in the state are
required to have a UDA based on population growth rates between 1990 and 2000, it would be advisable to coordinate the planning of a UDA and the adoption of a TDR program. The UDA requirement signifies that certain localities with extremely high growth rates and growth pressures must consider more compact development to ease these concerns and any associated effects. A TDR program could help direct growth to the UDA while also preserving land in the locality, at little to no cost to the public.

**Success Factors and Obstacles for TDR Programs**

As noted in the literature, many factors contribute to successful TDR programs. Survey respondents noted that political support was the most important factor. According to the literature, without political support, TDR programs are not likely to be approved or to be very successful. Planning and politics cannot be separated and rely on each other for support. Development demand and support from receiving area landowners were also of importance. Low development demand may signal a slow economy or a slow growth rate. It can also suggest that developers are satisfied with the density that get for free under current by-right zoning regulations. In this case, planners and policy makers may have to create development demand by amending the zoning code or only approving special exception or conditional use permits with the purchase of development rights. Other factors for successful TDR program can be seen in Figure 11.
Likewise, when asked what are the biggest obstacles to successful TDR programs, respondents gave many answers, but the top two responses were no development demand/market for development rights and no political support. Some respondents elaborated by saying that because there is no demand for development, a TDR program will never work. But, as the literature points out, development demand does not necessarily pre-exist in a locality and planners and politicians can help create demand. If the by-right zoning allows for developers to build enough housing stock to their satisfaction, there is no need to purchase development rights. Therefore, localities can review their zoning regulations and decrease the allowable by-right density, or they can approve upzonings or special exceptions only with the purchase of development rights. When a developer is satisfied with what he can get for free, he will have no incentive to purchase development rights.
Furthermore, the governing body must be strong enough to uphold and support recommendations made by planners as well as to withstand any political opposition or backlash. Without the support of planners and policy makers, TDR programs are likely to fail, and may not have enough support to become part of the comprehensive plan. Planners and policy makers educate the community on the importance of growth management and land preservation goals and the tools used to achieve them. They can also provide a supportive role to the community and encourage program acceptance. Other obstacles to successful TDR programs are noted in Figure 12.

**Figure 12: Biggest Obstacles to Successful TDR Programs**
Additional Comments Regarding TDR in Virginia

Localities were asked to provide additional comments regarding TDR programs either in their locality or in the Commonwealth. Two suggestions were made by localities that are not considering adopting TDR programs. The first pertains to the state enabling legislation. The legislation could be changed to allow trades in impervious surface cover (changes in the states stormwater regulations in the receiving area), provide for the ability to collect impact fees through exchanges, and provide more clarity on TDR banks (whether or not they are allowed). Another respondent commented that the state could provide state test program assistance to help localities thinking of developing a program but that may not have the requisite funds or staff on their own.

Political Structure and Support

My intention was to gather information to compare the political structure of each locality with its adoption of various growth management and land preservation tools, including TDR. However, the survey showed that most localities operate using some type of council-manager system thus it would be difficult to determine whether or not political structure affects adoption of growth management and land preservation tools. All localities with TDR programs or considering/in the process of establishing TDR programs have some form of commission-administrator government structure, except one. Any difference in results could be attributed to a sampling error and it therefore would be fruitless to test this variable.
CHAPTER VI - CONCLUSIONS

This research sought to understand the reasons why more localities in the Commonwealth of Virginia are not using transfer of development rights as a tool to manage growth and development. Although this tool has been authorized in the Code of Virginia since 2006, only two localities currently have functioning programs. Only half of Virginia’s localities responded to the survey but results show that very few localities are thinking about, or are in the process of, establishing TDR programs while the vast majority are not considering TDR at this time. Nevertheless, the study suggests that localities in Virginia are committed to managing growth and preserving land. However, they seem to rely heavily on just a few tools even though the Code of Virginia authorizes the use of many more.

Limitations and Potential for Future Research

The study was constrained by several limitations that must be considered when interpreting its findings and results. The email survey was sent to Planning Directors or a person of a similar capacity in each locality. It is possible that the recipient of the survey was unable or unwilling to respond. There were instances in which the survey recipient forwarded the survey to another member of the planning staff. These results were counted with all other results.

Time was also a factor. Given more time, more survey responses might have been obtained. However, a response rate of just under 50% was considered to be more than acceptable
to proceed with the research. Further research might consider focusing on a smaller number of localities in which more detailed questions can be asked, or could strive to achieve a higher response rate from all localities in Virginia by sending more reminders and follow-up emails.

The small sample size is another limitation. This research was limited in the tests it could run and the conclusions it could draw based on the often small and unevenly weighted data groups. This small sample does not invalidate the results of this research, but caution should be used when interpreting them as they may pertain only to the sample surveyed and not to the state as a whole.

The survey contained mainly multiple choice or categorical questions, but very few open-ended questions. While interviews might have helped obtain more detailed information, the study sought to identify only the most basic issues facing localities with regard to the adoption of TDR programs. Further research could be aimed at more detailed questions of both localities that are not considering adopting a TDR ordinance as well as localities that are either in the process of doing so or have already done so. Again, this does not invalidate the results, but clearly there is potential for future research. For example, community meetings might help to truly gauge the level of interest among citizens regarding various growth management and land preservation techniques and outcomes, as well as demonstrate the potential benefits of TDR to their community.

Despite the limitations of the study, some clear and important results were obtained. Furthermore, this work has set the stage for future research to examine this issue in more depth.
Conclusions

Based on the information gathered we can conclude that the state’s localities are not using TDR because they see no need for it. The most commonly cited reasons for not adopting TDR programs were that there was no need, no development demand or pressure, or that other suitable tools are available. Many localities stated that not only was there no need, but no development demand. However, development demand and need cannot be equated. As the literature notes, development demand does not necessarily exist in a market for development rights and planners and policy makers in each locality can help create such demand. Furthermore, by the time a need exists to manage growth and preserve open space, it may be too late to use certain tools.

Transfer of development rights can be used as a tool to manage growth and development in localities facing great pressures, but also as a tool to preserve farmland and open space. Localities could consider using TDR preemptively as a proactive strategy to preserve farmland and open space and protect rural character. Although the latest version of the TDR legislation does not explicitly allow for the development of a TDR bank, localities are not required to make a direct transfer of development rights between a seller and buyer through the same transaction. Therefore, localities can interpret the legislation as allowing for the banking of development rights, and in general, there is no reason to not use TDR to proactively preserve land on account of its economic, environmental or scenic qualities, or because it may eventually be subject to development pressures. The legislation should be amended to more clearly state that localities can bank rights and a working group could offer suggestions on how to make this happen.

Transfer of development rights banks can encourage participation in TDR programs since the seller can choose to sell his rights at any time instead of waiting for demand to exist.
general, TDR programs operate at little or no financial cost to a locality. Administering a TDR bank however, can be a costly, yet extremely important endeavor. The state could consider using its Office of Farmland Preservation to act as a statewide TDR bank. Instead of using money to purchase land outright, the Office of Farmland Preservation could use its funds to buy and hold development rights for localities wishing to undertake TDR programs. As soon as the banked development rights are sold to a developer, the Office of Farmland Preservation recoups its funds and can purchase more development rights. This would remove the cost burden from the locality, but still enable localities to offer the use of a TDR bank to encourage participation in TDR programs. Furthermore, the Office of Farmland Preservation could provide important, supportive functions, such as marketing and education, to localities that may not have the staff or resources available to provide these services.

Any locality experiencing a significant increase in population likely does not have adequate housing, and thus any new development could potentially be part of a TDR scheme. Current housing occupancy statistics suggest that a majority of Virginia localities do not have excess housing; therefore, any increase in population would necessitate an increase in demand for residential structures. Such demand could signify a need for TDR. Current zoning regulations may seem adequate at this time, but with future growth and development, the same regulations may not be appropriate. These regulations set a precedent for future development that developers will anticipate and regard as normal. Implementing a growth management program and changing zoning regulations are best done before the need arises. These proactive steps can preserve rural character and help ensure well-managed community growth while also saving money in the long term because compact developments save infrastructure and transportation costs, and can even save energy.
However, as Flyvbjerg (1996) points out, because power defines reality and some myths may persist even if untrue, any locality which does not perceive a need for TDR, will never develop such a program. Even with a real need, and even with proven benefits of TDR, if those in power perpetuate myths as truths, TDR may never be successful in Virginia.

Currently, many if not most, localities in Virginia appear to be taking a reactive approach to planning. They rely heavily on rezonings (conditional zoning/cash proffers) to extract proffers from developers and on special exception/conditional use permits to approve or deny new development. Instead of using a comprehensive plan to guide growth and development, localities are managing these issues in a piecemeal fashion. Not only is this inefficient, it undoubtedly will prove to be ineffective. This type of planning sets low standards and no limits. No precedent and no expectations to live up to are established. If a developer is satisfied with what he can get under current zoning regulations, particularly if there is a legacy of constant rezonings, he will have no incentive to participate in other types of programs, such as TDR. It appears there is a need for a paradigm shift in planning in Virginia in order for a program such as TDR to really take hold. A legacy of reactive planning leaves no room for proactive measures, such as TDR. Furthermore, the study indicates that few localities rely on impact fees to manage the fiscal impacts of growth, leaving room for discussion about impact fees and their usefulness as a tool for localities in Virginia to pursue more proactive planning.

As daunting as it may sound to create a transfer of development rights program in a locality with no current need, that is the ideal time to do so. The literature indicates that developing and using a TDR program in a locality facing high growth and development pressures will not succeed because land costs will be too high and “leap frog” development may
occur. The time to develop and implement a TDR program is before there is a need so that the program is already in place when the need arises.

In order to increase the use of TDR, the state should consider offering mandatory education and training seminars for policy and planning professionals to outline the benefits, costs and primary means of designing and implementing a TDR program. This research indicated that many practitioners simply do not understand the benefits of TDR and thus are unwilling to consider adopting a TDR ordinance. If the state did not feel that TDR was a useful tool, it would not have authorized its use. Thus, it would be highly beneficial for the state to take a proactive approach in encouraging the development and use of TDR programs.

Since many localities in the state have urban development areas (UDAs), it would make sense to combine the development of a UDA with a TDR program. If an area is already being sited for higher density and increased growth, it would be ideal to protect land at the same time. There is no point in planning to accommodate increased growth in one location if developers are still allowed to build in low density, sprawling developments. However, because the state legislature recently passed a law that no longer requires localities to have a designated Urban Development Area (Code of Virginia HB 1721), there is less of an incentive to link TDR with the UDA designation process. The state could consider providing incentives, such as increased transit funding, to localities that locate TDR receiving areas in designated UDAs.

A key insight from systems theory is that particular end goals can be reached in numerous ways; there is no one right course of action to achieve desired results. This may account for the different courses of action that have been used to accommodate growth and preserve land in the Commonwealth. However, this theory also suggests that the same course of action may not always produce the same results. “A systems perspective would see options…as a
way of identifying a package of actions consistent with the desired end-state of the system, its structural characteristics, and the values of those working within it” (Stewart and Ayers 2001: 88). Thus, even though a locality may pursue a PDR program, or even a TDR program, different outcomes may be achieved. Localities in Virginia may achieve similar goals through different mechanisms. According to systems theory, the environment in which a political system exists, the demands being made and the preferences expressed will have an effect on the outputs generated and on any future inputs to the political system. Although localities may not explicitly take account of the environment in which they operate, they are using different tools to achieve similar outcomes relating to growth management and land preservation.

While growth management and land preservation goals may be achieved through various means, TDR can be used to achieve both goals at the lowest cost to society. Thus, although PDR, for example, may be sufficient to achieve a locality’s land preservation goals, the same goals could be met at a lower cost using TDR. Similarly, localities may currently be able to manage growth reactively, but proactive measures will be more efficient and effective in the future. If a locality is working to manage growth, would it not be a good idea to also preserve land at the same time? Localities are not using TDR largely because it is new, confusing or difficult to understand and no model or well functioning programs currently exist in Virginia. However, with TDR localities can achieve with one tool, rather than several, both land preservation and growth management simultaneously. While many survey respondents noted there was no need for a TDR program, it would be advisable for them to consider the benefits of TDR over more traditional tools. Not only can TDR preserve land in perpetuity, it can also direct and manage growth to achieve, efficient, compact land use, at little or no cost to the government and the public.
It is important to remember that sprawl is not a constitutional right. While the 14th amendment does guarantee the right to free travel, localities should consider the rights of future generations to be afforded the same opportunities and quality of life. Proactively managing growth and development and preserving land does not take away anyone’s constitutional right to own or profit from land. Furthermore, TDR is not mandatory and citizens have the ability to not participate if they choose not to do so. While a downzoning may occur and a landowner may lose the opportunity to develop at a higher by-right density, he benefits from compensation in the form of development rights that can be sold to developers in the designated receiving area.

This research sought to understand the barriers and limitations facing localities in Virginia with regard to employing a TDR program to help manage growth and preserve land at the lowest cost to society. While there were obvious obstacles to TDR in Virginia, they are not insurmountable. The bigger problem lies not in the adoption of actual TDR programs, but in the legacy of planning in Virginia. Until planning becomes more proactive and less reactive, TDR programs are unlikely to be adopted at a significant scale. Hopefully, this research has highlighted a need for more proactive planning in a state that is facing significant growth pressures. The time to take the steps to manage growth and development is now, before the need to do so becomes even greater. Transfer of development rights programs certainly have a place in planning in Virginia and can help localities achieve a number of goals simultaneously. However, if localities continue down the current path of reactive planning, TDR will be rendered useless.
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