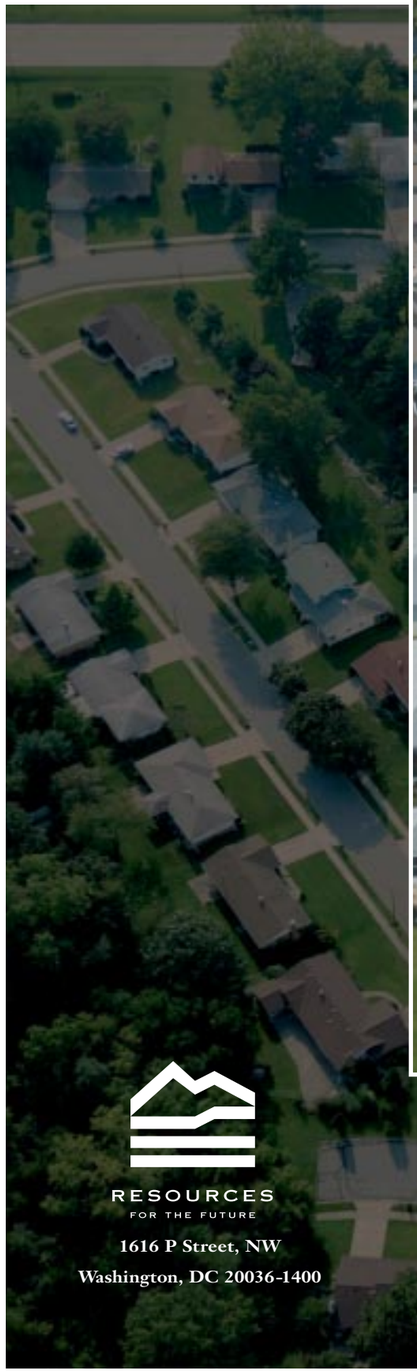

Transfer of Development Rights in U.S. Communities

EVALUATING PROGRAM DESIGN, IMPLEMENTATION, AND OUTCOMES

Margaret Walls
Resources for the Future

Virginia McConnell
University of Maryland–Baltimore County, and Resources for the Future

September 2007

RESOURCES FOR THE FUTURE
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EXECUTIVE SUMMARY

Private ownership of land in the United States comes with a bundle of rights and responsibilities. The bundle of rights usually includes the right to subdivide and develop the land. However, this right can sometimes be inconsistent with other social objectives, such as provision of wildlife habitat, preservation of farmland or certain ecological resources, protection of historically significant areas and scenic views, and prevention of development on highly erodible slopes or in difficult soils.

Regulating private land uses to achieve these social objectives generally falls to local governments. Local governments in the United States regulate in a variety of ways, but the primary instrument is zoning laws, which establish the allowable uses on particular parcels of land and the intensity of those uses. One planning tool that can be used in combination with zoning is a system of transferable development rights. TDRs allow ownership of the development rights on a privately owned parcel of land to be separated from ownership of the parcel itself. These rights can then be transferred from that property to another in a different location. Having transferred the development rights, the landowner is restricted from developing his land, usually by means of a conservation easement or restrictive covenant. The person to whom the rights are transferred—in most cases a real estate developer—uses them to develop another piece of property more intensively than allowed by its baseline zoning.

TDRs sound relatively simple in concept—development is transferred from one location to another—but they have often been difficult to implement effectively in practice. Among the approximately 140 TDR programs in existence in the United States, program designs differ greatly, and the results have varied from virtually no transfers at all (and thus no land protected from development) to preservation of 49,000 acres.

In this report, we carry out detailed case studies of 10 programs. The programs include five in Maryland (Calvert, Montgomery, Queen Anne's, St. Mary's, and Charles counties), two in Florida (Collier and Sarasota counties), and programs in Malibu, California; King County, Washington; and Chesterfield Township, New Jersey. They focus on a range of land use goals, including farmland preservation, prevention of development on environmentally sensitive lands, and curtailing of sprawl. Some have been effective and have preserved or protected land as intended, but others have not lived up to expectations. Their experience to date and the evolution of programs and innovative ideas provide useful lessons for other jurisdictions considering the use of TDRs. For each program, we describe its genesis, features, and outcomes, and we evaluate the program design and assess reasons for success or failure.

Determinants of a Well-Functioning TDR Market

TDR markets work as a land preservation tool when landowners are willing and able to sell development rights, and developers are interested in buying those rights. The relative strength of the supply and demand sides of the market will determine the prices at which TDRs are sold. The willingness of suppliers to provide TDRs and of developers to buy those rights depends on the complex interaction of the design features of the TDR program, local zoning rules, and the underlying housing and land market conditions in the region. Understanding the interaction among all three is critical to creating a well-functioning market.

The design features create the rules under which landowners and developers can participate in the market: which areas can sell development rights, and which can receive? How many can be transferred from a site, and how many used in another? TDRs must be layered on top of existing zoning rules, which almost all land is subject to and which define how densely different areas can be developed. In addition, land and housing market conditions are important because they determine whether it makes economic sense for landowners to buy or sell TDRs, given the baseline zoning and the opportunities created by the TDR program. Finally, other features, such as the difficulty of using TDRs and the ease of obtaining additional density through other means, can influence how well a TDR market works. We discuss all these determinants briefly here before summarizing each of the case studies.

TDR Design Features

When setting up their programs, local governments need to determine several critical design features. These are listed in the following table.

Designation of sending areas	Land from which development rights can be transferred
Designation of receiving areas	Land to which development rights can be transferred to get additional density
TDR allocation rate	Number of TDRs that landowners in sending area are permitted to sell, usually expressed per acre
Density bonus in receiving areas	Additional density allowed above the baseline with TDRs, usually expressed as dwelling units per acre
TDR requirement in receiving areas	Number of TDRs required for an additional dwelling unit

Underlying Zoning Regulations

While these design parameters are important determinants of a program's success, they do not work in isolation. Landownership carries some right to develop that land, as is established by zon-

ing rules. These rules include residential density limits, which establish a maximum number of dwelling units per acre. Jurisdictions might change these baseline density limits in some areas when setting up their TDR programs, for example "downzoning" areas they want to see preserved and sometimes downzoning receiving areas to boost TDR demand. TDRs amend zoning regulations, allowing additional density in receiving areas (the "density bonus" in the table above).

Economic Conditions in the Housing and Land Market

Economic opportunities for land parcels in undeveloped or in developed uses are key in the functioning of TDR markets. Because the TDR program is added to existing zoning rules, the supply and demand for TDRs will depend on the profitability of development under existing zoning, and the demand (or lack thereof) for higher density in some areas. As an example, if local zoning rules have set density limits in receiving areas that reflect the current market demand, there may not be much demand for additional density and thus little demand for TDRs. Setting a high density bonus will do nothing to spur demand. Similarly, if sending areas have high potential values in development, few properties will be offered to the program even if TDR allocation rates are high, and little land will be preserved.

Other Factors that Influence the Working of the TDR Market

In addition to economic and baseline zoning factors, other program features or rules about development in the jurisdiction can affect the TDR market. For example, if TDR use is not "by right" and developers must also win approval from county commissioners, they may be reluctant to incur the risk involved with trying to use TDRs. If additional density can be attained through means other than TDRs, the program may be underused. The existence of other land preservation programs in the community can also affect the TDR program, either positively or negatively. And finally, how the market actually functions is important—for example, whether brokers handle the deals, whether a TDR bank exists, how information is shared, and whether the local government participates in the market. The following table lists some of these additional factors.

Baseline zoning of sending and receiving areas	Maximum number of dwelling units per acre permitted by zoning
TDR use "by right"	Approval as part of subdivision approval process, or required hearing before a planning commission or other body
Other means of attaining additional density	"Free" density from planned unit developments, sewer connections, clustering, or other non-TDR means
Market features	Publicly available information on TDR prices, banks, brokers, transaction costs, price trends

The Case Studies

The first two programs we discuss, in Calvert County and Montgomery County, Maryland, are two of the most successful in the country. Both were initiated around 1980 and were designed to permanently preserve prime farmland, but they differ in important ways. Calvert County defined receiving areas very broadly to include residential and many rural areas across the county. In contrast, Montgomery County designated small receiving areas in residential areas over time to create demand for TDRs. Calvert's sending areas are all prime farmland in the county, and there was no initial downzoning of these lands. Montgomery, by contrast, downzoned one large area in the northwestern section to very low density but set a high TDR allocation rate. In Calvert, the entire parcel is placed under a conservation easement when the first TDR is sold; in Montgomery, landowners retain some residual development rights at the baseline density. This latter policy, which is typical of many TDR programs, has created problems in Montgomery County in recent years because the value of the retained development right is now quite high. Chapter 3 provides detail on this problem and how the county is trying to deal with it.

Calvert County is an exurban county approximately 40 miles from Washington, D.C.; many of its citizens commute to the metropolitan area. Its TDR program is one of the most active TDR programs in the country; approximately 13,000 acres have been preserved since the program began in 1978, which is about half of all preserved land in the county. Calvert's government participates in the market by buying some rights each year and retiring them. This helps the functioning of the TDR market, and prices have been very stable since the early 1990s. In general, the local planning authorities have managed the market well. In 1999 and 2003, the county instituted across-the-board downzoning of all areas of the county while increasing TDR density bonuses in some areas to allow developers to build to the original density limits. This has spurred TDR demand and has had the effect of concentrating development away from the areas the county has sought to protect. In addition, in recent years, the Calvert program appears to have managed the zoning and TDR regulations so that the economic value of preservation and farming versus development for many properties are very close.

Montgomery County is a prosperous suburban county that borders Washington, D.C. The county took the bold step in 1980 of downzoning a 90,000-acre region of the northwestern part of the county from 1 house on 5 acres to 1 house on 25 acres. TDRs were established as a way to compensate farmers for the loss in property values arising from the downzoning. To date, approximately 49,000 acres has been put in permanent easement through the sale of TDRs, making this the most successful program in the country in terms of acreage preserved. The program has also had its challenges. We collected and analyzed data on TDR receiving-area designation and TDRs used by developers. We found that most of the TDRs were sold in the 1980s, and there has been less demand recently. Original expectations were that most receiving area density bonuses would be used by developers, but in fact, only a relatively small share of the density allowed under TDRs has actually been used. In addition, many parts of the county do not permit TDR use at all. Because of the way receiving areas were added in small increments over time, TDR prices have tended to fluctuate a good deal over time.

St. Mary's County, Maryland, borders Calvert County and is relatively rural, like Calvert, but it lies just outside the Washington, D.C., commuting corridor. Its TDR program began in 1990 and, like the other Maryland programs, focuses on preserving farmland. This program is

somewhat similar to Calvert's in that rural-to-rural transfers are permitted and there was no downzoning of sending areas when the program was set up. In contrast to Calvert, however, the St. Mary's TDR program has been inactive. Between 1990 and 2002, only 9 TDRs were sold. During this period, developers building planned unit developments (PUDs), connecting to water and sewer, clustering, and adopting certain design enhancements could get extra density without TDRs. This is the main reason that the TDR program has failed to take off. Many of these "free density" options were dropped in 2002, and since that time, TDR activity has picked up. A total of just over 1,000 acres of land have been preserved in the St. Mary's TDR program. The county is currently considering some important changes to its program, including a requirement that any building in the rural areas beyond the first house on a parcel be required to use TDRs.

The Charles County program, adopted in 1992, allows TDRs to be sold from rural areas and used to increase density in a "development district" in the northern part of the county, close to Washington, D.C. Only about 2,000 acres have been preserved through the sale of TDRs in Charles County, in contrast to a total of more than 35,000 acres preserved through all other county, state, and private easement programs. We found that the lack of activity in the TDR program can be attributed to both supply and demand factors in the TDR market. Landowners are required to certify their property through the Maryland Agricultural Land Preservation Foundation—a state program that purchases easements to protect farmland—in order to sell TDRs. Few farms can qualify under this program, and those owners who do qualify their properties have been more likely to either sell the easement through this program, which tends to offer higher prices than the TDR program, or retain their development rights for possible future development of their properties. These lands have relatively high rural density limits (1 house on 3 acres), so their value in rural development is reasonably high compared to their value in farming. On the demand side, baseline zoning limits in the development district appear to be acceptable to developers and homebuyers. Without a demand for additional density, there is little demand for TDRs (and thus relatively low prices).

Queen Anne's County is on Maryland's Eastern Shore, farther from urban centers; it has many attractive waterfront areas and also a significant amount of farmland. Protecting this farmland is the focus of its two programs: a density transfer program called the noncontiguous development (NCD) option and a traditional TDR program. The TDR program, which began in 1987, was quite active until 1995, when receiving areas were limited to a narrow set of relatively high-density town centers. At that point, TDR sales dropped to virtually zero and most activity shifted to the NCD option, which allows density to be transferred between rural properties. Approximately 10,000 acres have been preserved in both programs since 1987. This problem—the lack of desire to build with TDRs in urban areas or town centers, or to build over the baseline density limits—is quite common. In some communities, current residents appear to be blocking higher density, while in others, demand for higher density from new homebuyers is insufficient.

The TDR program in Malibu, California, a wealthy coastal community in the northwestern part of Los Angeles County, provides more evidence about the problems associated with forcing density into already developed, urbanized communities. The historical basis for the Malibu program was the Santa Monica Mountains program, which began in 1979. Its focus was to prevent development of small, substandard lots on the steep slopes of the Santa Monica Mountains by allowing their owners to sell TDRs for use in Malibu. Between 1979 and 1991, the program re-

tired 924 of these lots and protected significant acreage; however, it has been virtually dormant since 1991, the year that the city of Malibu incorporated. Malibu had been the primary receiving area before 1991, but once incorporated, it stopped accepting the additional density. Its own program, designed by the California Coastal Commission and imposed on the city in 2002, is set up in much the same way as the earlier program and is designed to protect the hillsides bordering the city. The Malibu program has had only one transaction since it began, however—and that was due to a condition of approval for a subdivision. City planners state that the current supply is limited and asking prices are high. It is also apparent from development patterns in the community that the residents prefer relatively low-density development patterns and preservation of open space within the city limits.

The two Florida programs in our study, in Collier and Sarasota Counties, along with the programs in Chesterfield Township, New Jersey, and King County, Washington, are part of the "new generation" TDR programs that seek to address the problems with receiving areas that exist in many programs. Collier, Sarasota, and Chesterfield have all designated receiving areas on the fringes of their communities, away from current residents. King County has tried to enter into "interlocal agreements" with municipalities to accept additional density from TDRs and has also offered some compensation in exchange for density.

Both of the Florida counties are located in the southwestern part of the state, along the Gulf of Mexico coast. Both have dormant TDR programs on the books that were initiated in the 1970s and early 1980s. Although some acreage was preserved in Sarasota County, for the most part, neither of these programs achieved its goal. The problems in the early programs were related to an attempt to put additional density into high-density, urbanized areas, and to complicated requirements for selling and buying TDRs, including the use of "zoning overlays" and requirements that planning commissions approve transfers. Both counties have very recently enacted new programs—Collier County in 2003 and Sarasota in 2004. The new programs are similar in that they focus on protecting environmentally sensitive lands and wildlife habitat on the urban-rural fringe, and they attempt to accommodate growth by allowing new development and additional density with TDRs on some of that land on the fringe.

The Collier program divided a 73,222-acre area of land into sending, receiving, and "neutral" lands and allows landowners to transfer development from sending to receiving properties. Landowners in sending areas were given a high TDR allocation rate relative to baseline zoning, and in October 2005, several bonus TDRs were added for (1) early entry into the program (prior to September 2008), (2) environmental restoration and maintenance activities on the property, and (3) conveyance of the property to a governmental agency or nonprofit organization. TDR sales were initially slow but have quickened in recent months, particularly in response to the bonus incentives. Approximately 2,200 acres had been preserved as of January 2007, with another 1,400 pending final approval. More TDRs have been sold than have been used in receiving areas; developers and owners of land in receiving areas are simply holding onto them. Again, this is probably partially due to the fact that the bonus TDRs—in particular, the early entry bonus, which expires in September 2008—have increased supply. Although there appears to be a demand for relatively high-density development in the county, we are concerned that the PUD process, which governs most development outside of the receiving areas, might soak up all of the demand for density in the near future. In addition, the local government has established a TDR price floor, which leads to a disequilibrium in the market and is likely to dampen the use of TDRs.

Sarasota County undertook an extensive analysis of anticipated growth through 2050 and concluded that a significant amount of environmentally sensitive land on the urban-rural fringe was found to be in danger of being developed. The county responded by designating a 47,500-acre area on the fringe as the "2050 Area." It includes designated TDR sending and receiving areas; a more rural agricultural area of 36,000 acres also serves as a pure sending area. There was no downzoning when the program was initiated. So far, no TDR sales have taken place, but county officials anticipate that sales will start in summer 2007. It is difficult to determine why the market has been inactive, but we speculate that thus far there is limited demand for development in the 2050 receiving areas, which are somewhat outside the main developed area of the county. In addition, it is unclear to what extent county officials are making information about the program available to landowners and developers. One final issue is the fact that Sarasota County has an active program for the purchase of development rights, which may be supplanting TDR sales.

Chesterfield Township, New Jersey, initiated its TDR program as part of a 1998 statewide effort to get local jurisdictions to implement pilot TDR programs. The program focuses on preserving agricultural lands. Its unique feature is a master planned community on the fringe of the township, away from both the historical town center and the prime agricultural areas, that serves as the sole receiving area for TDRs. Moreover, all development in that community requires the use of TDRs. There was no downzoning of the agricultural sending areas when the program was set up, but sales have been brisk since the program began. As of April 2007, more than 90 percent of the receiving area was either built, under construction, or in the approval process, and approximately 3,200 acres of farmland had been preserved through the sale of TDRs. We should note that the Chesterfield program is relatively small; the entire land area of the township is approximately 14,000 acres.

King County, Washington, which includes the city of Seattle, has had a TDR program since 2001. It focuses on protecting rural resources and "urban separator" lands, responding in part to a state government law that requires urban growth boundaries to be maintained around all cities in the state. While the program allows transfers to rural and urban unincorporated lands, it is focused on transfer from rural to incorporated municipalities through the use of "interlocal" agreements. The county has had some small measures of success in this regard. The county also has some financial resources—so-called amenity funds—to compensate municipalities for the additional density. Three developments using TDRs have been built in municipalities, and the remainder of the TDR use has been almost all in urban unincorporated areas. A total of 455 TDRs had been sold in 48 private market transactions in King County through February 2007, preserving approximately 2,000 acres of land. In addition to the private market sales, the TDR bank, operated by the county, had acquired 1,124 TDRs as of February 2007. Most of these were from a single transaction with a timber company and protected 90,000 acres of land.

General Findings and Recommendations

Our overall findings from the case studies suggest that TDRs have much to recommend them, but in many cases, the programs do not seem to live up to expectations. We conclude that as a land policy tool, even the best-designed programs have disadvantages that go hand-in-hand with their advantages. On the positive side, advantages include the following:

- TDR programs can preserve land without expenditures of tax dollars.
- They give developers and landowners more flexibility than under strict zoning or other mandates.
- The programs have the potential to compensate landowners for downzoning or other restrictions on their land.
- They can accommodate growth and still preserve land from development.

The disadvantages include these:

- Outcomes are uncertain. Because TDR programs are inherently voluntary, one cannot be sure which landowners will participate and how many acres will be preserved. This is true for most land preservation programs to varying degrees—purchase of development rights programs also are voluntary—but uncertainty seems especially salient for TDRs.
- More development may occur than there otherwise would have been. Some parcels that would have stayed undeveloped even without a TDR program may have their development rights transferred and used on another parcel.
- The programs can be complicated to design and implement, and may take a good deal of ongoing analysis and management to be successful.

The biggest disappointment with TDR programs is that they are not working to preserve land and transfer density as well as many jurisdictions would like. Our research suggests some important factors that may account for this. First, TDRs appear to work better where development pressures and thus demand for additional building are strong. Second, in all the programs that we analyzed, it has been difficult to force additional density into high-density residential areas. Despite the desire of many planners and smart-growth advocates to focus higher-density development on town centers and other areas with existing infrastructure, the reality is that no TDR program has been consistently able to do this. Third, there must be general agreement about the land-preservation goals of the community. Conducting outreach to the public about the goals of the TDR program and getting consensus on the importance of land preservation in some areas and higher density in others are crucial.

The first step to a successful TDR program is ensuring an active market in development rights. This is where most TDR programs have failed. An active market is more likely if the following conditions are met:

- Jurisdictions need to have a good idea of housing and land market values at existing zoning limits, so they are aware of the economic incentives for landowners when they participate in the TDR market. Information about whether and where there is demand for additional density and about the value of the sending areas in farming or other undeveloped uses and in development is crucial.
- Using results of this evaluation, the local government needs to designate receiving areas in areas with demand for density above the baseline zoning.
- It is important that higher density not be given away "for free," outside the TDR market.
- Because receiving areas determine demand for TDRs, they need to be established either at the outset of the program or in such a way that market sales and prices remain stable.

- Allowable density under TDRs should be "by right" and not negotiated with planning boards and the public.
- Local government needs to recognize and carry out its role in making the market work by providing information, periodically participating in the market, and collecting and analyzing data from the program.

New Jersey requires communities that are considering TDR programs to undertake an extensive real estate market analysis and design a program that accommodates growth while preserving land. The state provides grant money to local communities to undertake these analyses. We believe that market analysis is an important first step that any community needs to take before embarking on a TDR program. Understanding the experiences in other communities, including the 10 communities we cover here, also provides valuable lessons learned. TDRs have a great deal of potential but need to be carefully designed and implemented to achieve their goals.

CHAPTER 1

Introduction: Land Preservation, Zoning, and Transferable Development Rights

Private ownership of land in the United States comes with a bundle of rights and responsibilities. The bundle of rights usually includes the right to use and occupy the land, transfer the land, sell it, bequeath it, and do a host of other things with it, including subdivide and develop it. The right to subdivide and develop can sometimes be inconsistent with other social objectives, however. For example, land in certain areas might provide valuable wildlife habitat or harbor unique ecological resources. It might contain areas of historical significance, scenic views, or farmland that provides aesthetic benefits to surrounding residents. For reasons related to topography or soils, development could cause erosion or other problems.

Regulating private land uses to try and achieve these social objectives generally falls to local governments. And the principal means by which local governments regulate is through zoning. Zoning laws establish the uses of the land permitted by right—industrial, residential, commercial, and so forth—as well as any conditional uses. For example, special uses such as golf courses, nursing homes, mining, and myriad other activities may be allowed in certain zones under certain conditions. Zoning laws also dictate the intensity of land use. For example, in residential zones, the laws prescribe a maximum density at which a given parcel of land can be developed, usually expressed in the number of dwelling units per acre.[1]

Zoning can be a blunt instrument for achieving many environmental goals, however. Establishing an area with rural zoning, for example, does not mean that properties must remain in rural uses. Usually, some amount of low-density development is allowed as part of the zoning code.[2] And the use of restrictive zoning to achieve land preservation goals tends to reduce property values, so it may be contested by property owners and not always embraced by local governments that rely on property tax revenues to fund many local services. One way to preserve land from development without taking away the rights of private landowners is to set up a system of transferable development rights. TDRs allow ownership of the development rights on a privately owned parcel of land to be separated from ownership of the parcel itself. These rights can then be transferred from that property to another one in a different location. By transferring the development rights, the landowner is restricted from developing his land, usually through placement of a conservation easement or restrictive covenant on the property. The per-

son to whom the rights are transferred—in most cases a real estate developer—uses them to develop another piece of property more intensively than allowed by the baseline zoning on that parcel.

In theory, TDRs can lead to a different—and potentially better—spatial allocation of land uses. They can preserve land from development in some areas while still allowing growth in others. They can be used to protect wildlife habitat, ecologically sensitive wetlands and stream buffers, forested areas, properties of historical significance, and farmland threatened by development. And from a local government's point of view, TDRs have a very important selling point: they do not require the expenditure of public funds. All money changes hands in the private marketplace, between landowners and developers. This makes TDRs as a land use tool quite different from purchase of development rights (PDRs), under which local government must raise money to buy and retire the development rights to the land.

TDR programs sound relatively simple on paper—density is transferred from one property to another—but in practice, they can be quite complicated. TDR programs create a market for development rights, and many things can affect the profitability of buying and selling those rights. For example, local government must determine which areas of the community are allowed to sell TDRs, which are allowed to use TDRs to develop more densely, how densely the "receiving" areas can be developed, how trades occur in the marketplace, and the mechanism by which transfers are approved. The underlying zoning in both the sending and the receiving areas, as well as land values in development and other uses, will influence how well a TDR program works. There are important roles for local government, too, in deciding whether to participate directly in the TDR market by buying and holding or retiring rights itself. Current programs vary widely in their designs, objectives, and outcomes. Communities considering adopting TDRs need to understand the complexities involved in the approach and learn what has worked in existing programs—and what has not.

According to Pruetz (2003), 142 TDR programs are now operating in the United States. Some of these programs are not large enough to significantly affect land use patterns. For example, a program in the town of Hollywood, Florida, just north of Miami, rezoned a relatively small beachfront area to restrict development and adopted a TDR program to mitigate the impacts on property owners. Monterey, California, adopted a TDR program to protect hillsides and ocean views but designated a land area of only 20 acres as a sending site (Pruetz 2003). Hillsborough County, Florida, permits transfers only between contiguous properties. Furthermore, some programs are "on the books" but virtually ignored by local planners and thus not used by property owners. We focus our study on programs that are important land use instruments in their jurisdictions. This does not mean that all have been successful at achieving their goals; several have seen little or no activity. But they are all significant elements of the planning and zoning policies in their communities.

We begin in Chapter 2 by explaining how TDRs work, with a description of many of the program parameters that local government must set and how those affect outcomes. The bulk of the report then examines 10 TDR programs, focusing on the parameters introduced in Chapter 2. These programs include some that have a farmland preservation goal—the most common objective—and some that are attempting to preserve environmentally sensitive lands and habitat. Still others that have "smart growth" or "anti-sprawl" objectives—namely, to preserve open space and channel development toward more compact urbanized areas with existing infrastruc-

ture. We explain the motivation for the programs and the process by which they came about; we then describe program design; and finally, we document the outcomes: TDRs sold, acres of land preserved, and to the extent possible, changes in the spatial allocation of land use. The programs we cover are in Montgomery, Calvert, St. Mary's, Charles, and Queen Anne's counties in Maryland; Collier and Sarasota counties in Florida; Chesterfield Township, New Jersey; Malibu, California; and King County, Washington.

Chapters 3 and 4 discuss the TDR program "standard-bearers," Montgomery County and Calvert County, Maryland. Like the programs in other Maryland counties, both focus on farmland preservation. They have both been successful in preserving land, but they are designed quite differently. We discuss those differences and what has made the two programs work. In Chapters 5, 6, and 7, we analyze three other Maryland programs, each of which has problems that have limited their performance. Chapter 8 describes the program in Malibu, California, which attempts to limit development on the steep slopes of the coastal mountain range bordering the city. Malibu's program was originally developed by the California Coastal Commission, and we discuss the relationship between the city and the state with respect to the TDR program.

Chapters 9 through 12 assess some new-generation TDR programs. Collier and Sarasota Counties in Florida and Chesterfield Township in New Jersey have all, to some extent, accepted some growth and attempted to channel it to new communities outside existing residential areas. This new tactic is designed to get around a problem in many programs: a reluctance on the part of residents in established communities to accept the additional density that comes with TDRs. King County, Washington, is our final case study; its program also attempts to solve the existing resident problem but does so by trying to compensate municipalities for accepting density. We discuss the experiences to date in all of these programs, describe the results thus far, and discuss where they seem likely to go from here.

One objective in this report is to chronicle the varied experiences with the different TDR programs across the country. It is important for other communities considering TDRs to understand their fundamental differences, along with the results achieved. Therefore, much of our report is documentary in nature: describing program goals, the design of programs—including density limits, sending and receiving areas, density bonuses, and so forth—and program outcomes, such as acres of land preserved and number of development rights transferred.

In addition to documenting, however, we also evaluate. Does the program appear to be a success? If so, why, and if not, why not? One important measure of success is whether the TDR market functions well over time. If no development rights are being bought and sold, the TDR program is not doing what it is designed to do: preserve land in some areas and transfer development to others. If there is little market activity, we then explore whether there is insufficient demand for TDRs on the part of developers or a problem on the supply side that landowners do not want to sell TDRs in regions designated for protection. Does the problem stem from the design of the TDR program, or is it due to the underlying zoning rules and local housing markets? When a TDR market is working well, what is contributing to its success?

Because TDRs are created markets, we also look at them through the lens of microeconomics to see whether they share the features of competitive, efficient markets in general. For example, is there sufficient information in the public domain about market prices, about which landowners have TDRs for sale, and about who is buying? How many potential buyers and sellers are there in the marketplace? Are transaction costs for participating in the program high or

low? And finally, are equilibrium TDR prices relatively stable across transactions and increasing over time, like the price of other assets? These are important questions to ask about any market, and we believe they are also important determinants of a TDR program's success.

Finally, we look at whether the community is making progress toward the land use goals the TDR program is designed to achieve. If the program targets farmland preservation, for example, a question to ask is how many acres have been preserved?

For the most part, we do not define success or failure outside the boundaries of the TDR program's stated objectives. In other words, if the program is attempting to preserve farmland acreage countywide, it is unfair to call the program a failure if it does not preserve particular tracts of land, if it does not promote particular agricultural activities, or if it does not protect other kinds of open space. One cannot ask too much of a TDR program. Likewise, a community may have multiple land use goals, but in most cases, one instrument cannot achieve them all. In fact, we find that it has often proved most effective if communities use TDRs in conjunction with other land use instruments, such as zoning, PDRs, land purchase programs, and development impact fees, to achieve their land use goals.

CHAPTER 2

How Transferable Development Rights Work

Simply put, transferable development rights allow the transfer of development from one parcel of land to another. The parcel of land from which development is transferred—called the "sending" parcel—is preserved from development, while the "receiving parcel" is developed more intensively than allowed by the baseline zoning. The design of a TDR program has several elements. The local government needs to establish (1) the sending and receiving areas—that is, which lands are allowed to sell development rights and which are allowed to receive those rights and be developed more densely; (2) the baseline zoning for both sending and receiving lands, and whether that zoning will be changed when the program is introduced; (3) the TDR allocation rate—that is, how many TDRs a landowner is permitted to sell, generally expressed per acre of land; (4) the density bonus, defined as the additional density allowed on receiving parcels relative to the baseline density on those parcels; and (5) how many TDRs are necessary to build an additional dwelling unit on a receiving parcel.[3]

One critical issue is whether TDR use is "by right" or whether public hearings and/or approval by a county governing body is required. Another facet of TDR programs worth exploring is how the market works. TDRs are fundamentally a market-based program, with exchanges taking place between private landowners and developers. How are prices determined? How do those exchanges occur and how is information shared? Are real estate agents and brokers involved? Does the county government participate in any way? Is there a TDR bank? Finally, there are ancillary issues not directly related to the TDR market that affect the performance of the TDR program. One of these is whether a density bonus can be achieved in ways other than with TDRs. Another concerns the matter of compatible uses on the land—that is, what are the restrictions and/or permitted uses on the land that is preserved.

All of those TDR program elements and other government regulations, programs, and requirements work in concert with local housing and land market conditions. In particular, the demand for and supply of land for different uses, the demand for residential density, and the extent to which density limits established in the zoning code constrain the local housing market are all factors that determine how well a TDR program works. For example, the underlying demand for density in the receiving areas will determine the demand for TDRs, which is often less than the density bonus limit set in the programs reviewed here. In fact, local governments need to be aware of housing market conditions when they establish receiving areas so that they have

some idea of the actual demand for TDRs. Likewise, when setting the TDR allocation rate, it is important to know the value of sending area properties in nonresidential uses such as farming. We emphasize some of these economic issues in our discussion below.

Defining Sending and Receiving Areas

In principle, it is not necessary for TDR programs to have specified sending and receiving areas. One could imagine a system in which the local government sets a total cap on residential development in its jurisdiction, allocates development rights to landowners in some way—say, 1 right per acre owned—and then allows free trading across landowners.[4] Such a system should sound familiar to anyone who works in the environmental policy arena and has heard of the cap-and-trade approach to reducing pollution. In these programs, an industry is subject to an overall cap on emissions but each firm in the industry can either buy emissions permits from other firms or sell its own permits. This is the way the well-regarded sulfur dioxide cap-and-trade program covering U.S. power plants works, for example, and it is the structure for the European Union's nascent carbon trading program.

No community today has a pure cap-and-trade TDR program in which any landowner can trade with any other. And all programs currently operate in concert with zoning rather than in place of it. They specify exactly which areas are allowed to sell TDRs (sending areas) and which are allowed to use TDRs (receiving areas) to be developed more densely than allowed by baseline zoning limits. And there is no absolute cap on development in any one period; instead total development over time is roughly limited by the allowable zoning rules if all land was built out.

FIGURE 2.1

SENDING AND RECEIVING AREAS IN A HYPOTHETICAL TDR PROGRAM

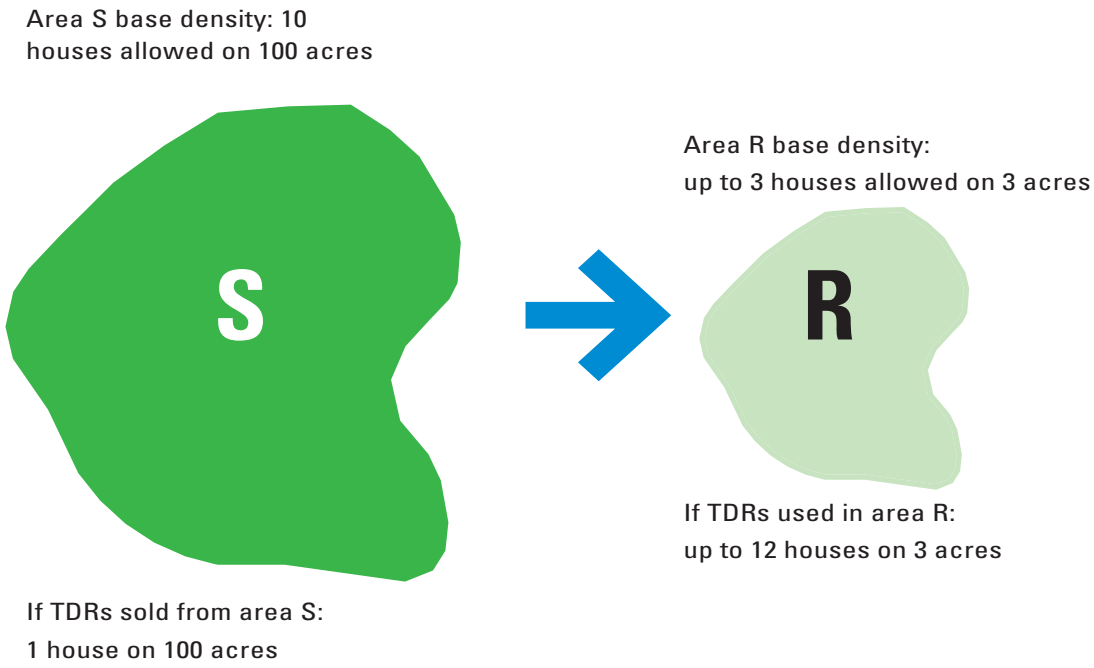
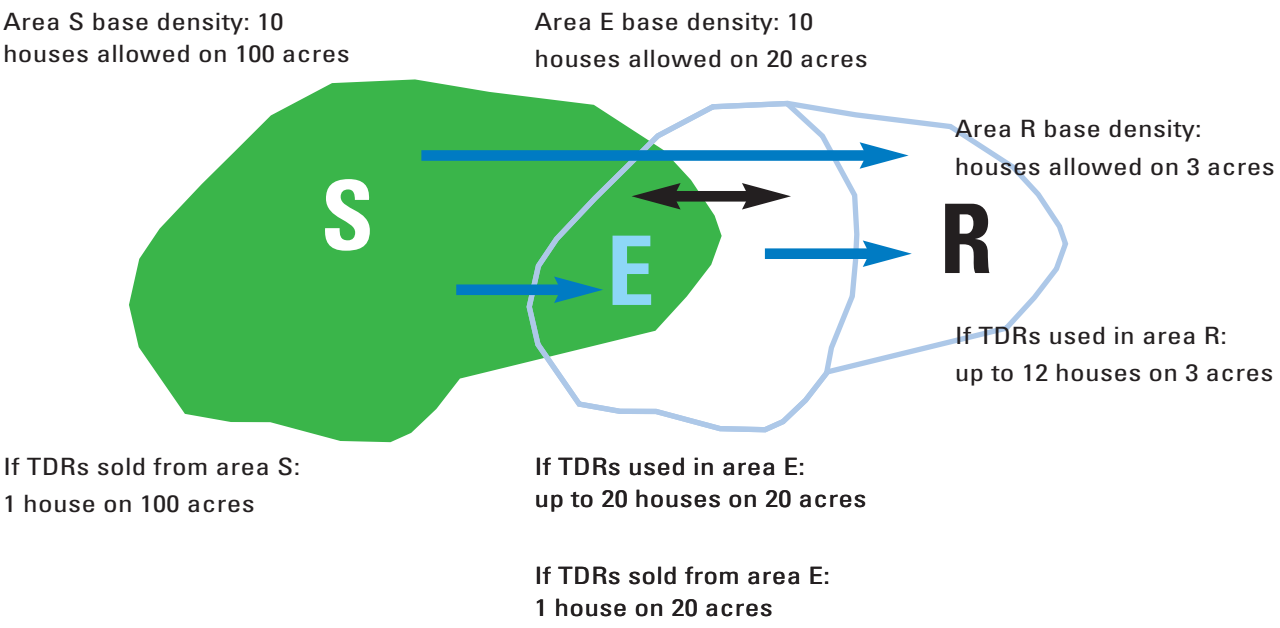


Figure 2.1 provides an illustration of a hypothetical TDR program. The area labeled S (sending) would be the area targeted for preservation. This might be prime farmland, ecologically sensitive wetlands, a particular wildlife habitat, steep hillsides on which development might cause erosion, or a historical preservation district. Some baseline zoning exists on the land in area S—in this example, 1 house on 10 acres is allowed. If a property sells its development rights, it is covered by an easement that restricts development in some way. The hypothetical sending property in Figure 2.1 could sell 9 development rights and have a single house on 100 acres. The area labeled R (receiving) is the area targeted for more dense development. If the TDRs are used on properties in the R area, those properties can be developed more densely than allowed by the baseline zoning. In the example, density can increase from 1 dwelling unit per acre (du/ac) up to 4 dus/ac if TDRs are used. The direction of the arrow shows the direction of the transfer of development, from S to R. Whether the allowed number of TDRs are actually used in the receiving area depends on the market conditions and the demand for density. In our hypothetical example, 9 houses could be built in the sending area if TDRs are not sold and 9 built in the receiving area (in addition to the 3 allowed by baseline zoning) if TDRs are sold, leaving the total number of houses the same. This will not necessarily be the case. The number of rights that can be transferred and used in receiving area depends on other program features, as we discuss below.

Figure 2.2 shows an alternative TDR program in which some areas are permitted to be either sending or receiving areas. There are a few programs in the United States that operate this way. In our example, there are some pure sending areas, labeled S, some pure receiving areas, R, and some areas that can be either, E. Landowners in the E region may sell their development rights and preserve their land, or purchase development rights from others and develop their proper-

FIGURE 2.2

HYPOTHETICAL TDR PROGRAM WITH OVERLAP IN SENDING AND RECEIVING AREAS



ties more densely than allowed by baseline zoning. As in Figure 2.1, the direction of the arrows shows the direction of the transfer of development. In this case, however, there are more possibilities. Development can be transferred from S to E or R, from E to R, or within E. Programs with sending and receiving areas that overlap allow landowners more flexibility in their land use decisions and may preserve more land overall if there is demand for additional density in E. This design may also preserve more land interspersed with development in these areas, which may be acceptable or even appealing to some communities but not to others.

Baseline Zoning on Sending and Receiving Lands

A crucial determinant of TDR program success or failure is the baseline zoning governing the sending and receiving areas. In the example in Figure 2.1, the sending area has 1 du/10 ac baseline density limits. This means that landowners can choose not to sell TDRs and instead sell to a developer, who would be allowed to build an average of 1 dwelling unit on 10 acres. The more restrictive the baseline zoning in TDR sending areas, the less lucrative the development option vis-à-vis preservation. Therefore, the more restrictive the zoning, the more likely are property owners in sending areas to try to sell their development rights and preserve their land. And the opposite is also true—the higher the allowed density in the sending area, the less likely are property owners to participate in the TDR program.

The receiving area in Figure 2.1 has a baseline density limit of 1 du/ac. These density limits are also important for TDR program success. If the allowable density in receiving areas is already close to the density at which homes are being built, then there may be little or no demand for additional density and therefore for TDRs. This has been a problem in several TDR programs. In fact, many local government planning departments may have set their current density limits at about the desired level in each area. This can pose a problem for TDRs, since a demand for additional density beyond the baseline is essential to program success. In fact, knowledge of the underlying housing and land markets in different areas is essential for designing a good TDR program.

If there is insufficient demand for additional density, one option may be to downzone receiving areas—that is, reduce baseline density limits in the hope that developers would buy back the density through purchase of TDRs. In some cases, this option may backfire, however, and lead developers to build in more outlying areas, or build to the new lower baseline limits in the receiving areas, or both. The results depend on local housing market conditions.

The more common option is downzoning sending areas. Lowering the baseline density limits on sending area properties reduces the opportunity cost of selling development rights, thus providing a potential boost to TDR supply. Historical efforts to preserve land from development in many jurisdictions around the country have included downzoning as an initial mechanism.[5] And TDR programs, in many areas, are seen as a partial compensation for downzoning. Planners have long espoused the use of TDRs as a means of compensation (American Farmland Trust 2001).

Downzoning of both sending and receiving areas—that is, jurisdiction-wide downzoning—may help jump-start the TDR market. We discuss this issue further in the case studies below, especially the Calvert County program where there have been several county-wide downzonings.

TDR Allocation Rate

If landowners in sending areas are allowed to sell their development rights, the question then becomes how many development rights are they allowed to sell. The number of rights that they can sell relative to the amount of development permitted by baseline zoning helps determine the relative value of preserving the land versus developing it. For example, in Figure 2.1, the sending area density limits are 1 du/10 ac. This means that a 100-acre property could accommodate no more than 10 houses. But the local government may give landowners in the area something like 5 TDRs/ac, in which case the owner of 100 acres can sell up to 20 TDRs.[6] In instances where the sending area has been downzoned, the TDR allocation rate is often related to the original zoning density limits. For example, in Montgomery County, Maryland, the rural zoning was originally 1 du/5 ac; it was changed to 1 du/25 ac when the TDR program was adopted, but the TDR allocation rate was 1 TDR/5 ac, equivalent to the old density limits. Collier County, Florida, instituted several bonus TDR allocations—for early entry to the program and for certain desirable land management procedures—to spur sales. Sending properties there have zoning of 1 du/40 ac, but the TDR allocation rates are high. All else equal, the greater the TDR allocation rate relative to the baseline zoning, the greater the incentive a landowner has to sell his rights. Although sometimes the allocation rate is not based on acreage, or at least not strictly on acreage—a program in the Lake Tahoe region is one example where the allocation depends on effect on water quality—such programs are rare; for simplicity, the larger the parcel, the more TDRs the landowner is allocated.

An important point is that in a well-functioning TDR program, a higher allocation rate will result in a greater total amount of units built in the region. Or, if the sending area was downzoned, as in Montgomery County, the higher allocation rate may allow total building to remain the same.

Density Bonus

Developers who purchase TDRs can use them to build to a greater density in receiving areas than is allowed by baseline zoning. The density bonus established in the TDR program determines how far beyond the baseline density they can build. In the hypothetical example in Figure 2.1, the developer can build 4 du/ac with TDRs compared with only 1 du/ac without TDRs: the density bonus is 400 percent. In areas where building is constrained by the density limits set in baseline zoning regulations, a higher density bonus can spur demand for TDRs. However, the underlying fundamentals of the housing market are the main motivation for TDR use, and the actual number used may be quite different from the maximum density bonus allowance. A higher density bonus may do nothing to spur TDR demand if there is little demand for additional density in the receiving areas.

TDRs per Additional Dwelling Unit

In some programs, developers need only 1 TDR to build an additional dwelling unit in a receiving area. This is the case in the Collier County, Florida, program (Chapter 6). In others, they may need to purchase multiple TDRs. For example, in Calvert County, Maryland (Chapter 4),

developers need 5 TDRs for each additional house. One must take extreme care in comparing TDR prices and quantities sold across programs because this feature can vary.

Summary of TDR Program Parameters

Zoning and the program features described above provide incentives to landowners to sell TDRs and developers to purchase them. A decrease in the maximum density allowed (downzoning) on sending lands increases the incentive to sell TDRs, since lower allowed density reduces the profits from development of the land; on the other hand, a decrease in the maximum density on receiving lands increases the incentive to buy and use TDRs. Allocating more TDRs to property owners in sending areas increases the likelihood they will sell. Increasing the density bonus allows the developer to build more houses on a given property and should thus increase TDR demand, provided there is demand for additional density in the area.

All of the program parameters work together, and in conjunction with basic land market conditions, to determine TDR demand and supply and equilibrium TDR prices. To spur TDR use, local government may undertake some combination of downzoning the sending or receiving lands, increasing the TDR allocation rate, creating a density bonus, and raising the number of TDRs required per additional dwelling unit built. Nevertheless, the fundamentals of the housing and land markets in the area are what determine the TDR program outcomes. Changing the allocation rate, for example, may have no effect in some markets but big effects in others. In designing its program, a community needs a good understanding of the underlying market fundamentals.

Other Factors Affecting the TDR Market

A host of other issues affect the workings of a TDR program, including (1) whether TDR use is "by right" or whether additional requirements must be met before TDRs can be bought and sold; (2) whether additional density in receiving areas can be attained in other ways besides TDRs; (3) other requirements or stipulations on land use in sending areas—for example, specifications for so-called compatible uses on private lands that are considered environmentally sensitive; and (4) local government's role in providing information and oversight of the market.

In some programs, TDR use is "by right": if all of the conditions laid out in the TDR ordinance are met then TDR use is usually approved by a staff member in the county planning department. Programs that are not by right have more hurdles, such as public hearings, in which residents may protest the additional density from TDR use, or approval by the county commissioners or a similar board. The by-right case creates less uncertainty for TDR sellers and buyers, and this can improve the performance of the market, but the county government will not have as much say in individual land uses.

In some communities, TDRs are almost an afterthought in the development process, and additional density in receiving areas may be allowed through means other than purchase of TDRs. For example, some communities with TDR programs allow additional density if the developer connects to public water and sewer, includes affordable housing units, submits a "planned unit development" proposal, or devotes a certain percentage of the land to open space. Such possibilities tend to dampen the demand for TDRs.

Additional land regulations may also govern the preservation of sending lands. Landowners may have to conform to compatible uses, with everything else excluded or requiring special approval. Certain management practices may be required, such as native species preservation and maintenance of stream buffers. Landowners may be required to submit periodic forest or farm management plans. These additional mandates and regulations can create disincentives for landowners in sending areas to enter the TDR program.

Local government can be hands-off, or it can facilitate the market by providing information to buyers and sellers or even entering the market as a buyer to stabilize prices during slow periods. In some programs, government may set a minimum TDR price, as in Collier County, Florida (Chapter 9). Local governments, including King County (Chapter 11) and the well-known Pinelands program in New Jersey (not among our case studies), may operate TDR banks.

Finally, experience with the implementation of actual TDR programs has shown that certain TDR policies or program features can have unintended consequences. For example, when a relatively small area adjacent to an urban area is downzoned to protect it from further development, surrounding local land markets will be affected. The downzoning may be intended to push development toward the urban area, but the effect could be the opposite if housing market conditions are such that the outlying areas become more valuable for development. In fact, there could be more dispersed development instead of less. Another example is when developers are required to purchase the maximum number of allowable development rights if they are building in a receiving area. This could actually reduce the number of TDRs bought overall if no additional density is more profitable than the maximum additional density with TDRs

In our case studies in the following chapters, we will discuss each of these issues and highlight their importance in particular cases.

CHAPTER 3

Calvert County, Maryland: Maintaining Flexibility in Land Uses

Calvert County is in southern Maryland on the western shore of the Chesapeake Bay. Geographically, it is the smallest county in Maryland, with just under 138,000 acres. It has 101 miles of shoreline along the Bay and the Patuxent River to the east. Calvert's TDR program, adopted in 1978, was the first one in Maryland. It is focused on preserving farmland and forested lands and, as we will show below, has been quite successful in attaining its goals. Figure 3.1 shows a map of all counties in Maryland. The northern border of Calvert County is 35 miles from Washington, D.C. (the half-rectangle on the map bordering Montgomery and Prince George's counties). We will refer to this map in our discussions of Montgomery, St. Mary's, Charles, and Queen Anne's counties in the following chapters.

Background on Calvert County

Calvert County's relative proximity to Washington, D.C., as well as Annapolis and Baltimore has contributed to its being one of the fastest-growing counties in the state in recent years. The county government estimates that 43 percent of workers hold jobs outside Calvert County, with the majority of those in the Washington area. During the decade of the 1990s, Calvert's population increased by more than 45 percent, far above the state average of 10.8 percent. And between 2000 and 2004, the population grew another 16 percent. Calvert County's population in 2004 was 86,474 (Maryland Department of Planning, State Data Center 2004).

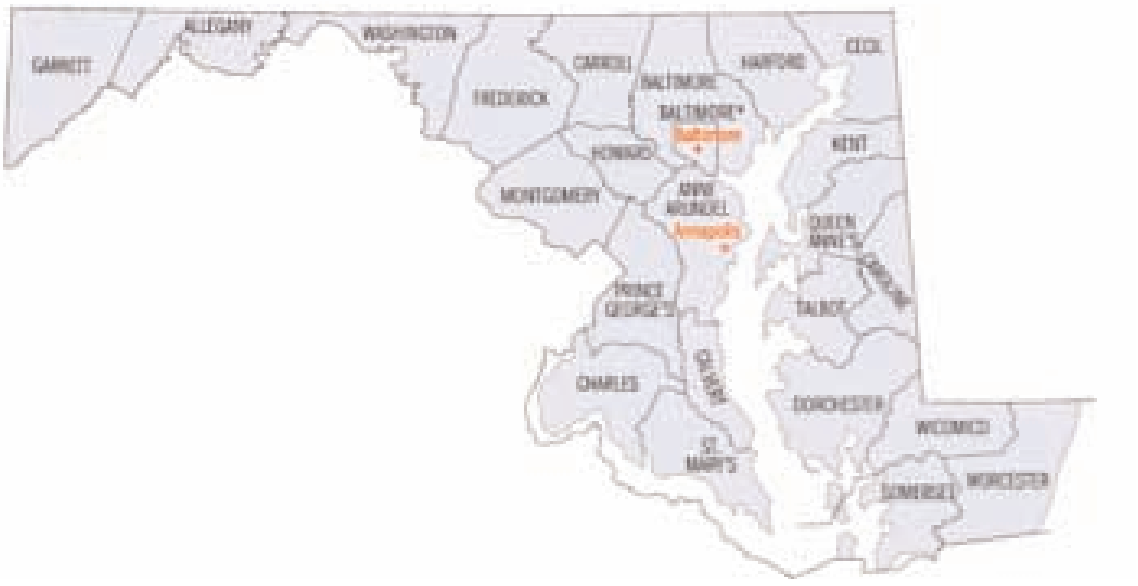
Calvert has no large communities within its borders. The two incorporated towns of Chesapeake Beach and North Beach, on the Chesapeake Bay, have a combined population of slightly more than 5,000. Solomons Island, at the southern tip of the county, is primarily a resort and retirement community and has approximately 1,600 residents. The county seat is Prince Frederick, which lies geographically in the center of the county and has a population of 1,432. Most housing in the county is in low-density subdivisions outside of town centers. McConnell et al. (2006b), using data from all subdivisions built in the county between 1967 and 2001, find that the average lot size across all subdivisions is 2.6 acres.

In 2003, median household income in Calvert County was $75,250, slightly above the U.S. average and above that of its southern Maryland neighbors, St. Mary's and Charles counties. As in much of the Washington region, house prices in Calvert County have increased in recent years. In real terms, the median sales price rose only slightly over the 1996–2001 period, but since 2001, it has gone up by 70 percent—from $170,000 in 2001 (in 2005 dollars) to just under $290,000 in 2005.[7] There is a distinct difference in prices in the northern and southern parts of Calvert County, however. In 2001, for example, the median sales price for single-family homes in Dunkirk, the northernmost town center, was $299,500 (in current-year dollars), while the median price in Lusby, a town 28 miles farther south (and thus farther from Washington) was $220,000.[8]

Farming was historically important in Calvert County, with tobacco a major crop. However, the farms have always been quite small. And with the state's buyout of tobacco farmers (using tobacco industry settlement money) beginning in 2000, the value of farming has declined sharply in recent years.[9] As recently as 1997, $3.3 million was earned in tobacco sales, but by 2002, that figure had fallen to one-tenth that amount, even without an adjustment for inflation. According to the Southern Maryland Agricultural Development Commission (2007), a total of 877 growers in Maryland, most of those in the three southern Maryland counties of Calvert, Charles, and St. Mary's, had taken the buyout as of January 2005. This represents 94 percent of all producers. In the past few years, many farmers have been in the process of shifting to new crops and agriculture is clearly in a state of flux. Interestingly, until 2002, the average value of agricultural land and buildings in Calvert County was above the state average. But values declined steadily between 1978 and 2002, in contrast to the state values, which rebounded somewhat in the early 1990s. In 2002, the average value per acre in Calvert was $3,980, 24 percent below the 1978 value (in constant-dollar terms) for the county. The average for Maryland as a whole in 2002 was $4,084.

FIGURE 3.1

COUNTIES IN MARYLAND



Just over 30,000 acres—approximately 22 percent of county land—was in agriculture in 2002, a 42 percent decline from 1978 and a 20 percent decline over the 10-year period from 1992. There were 634 farms in the county in 1978, compared with 321 in 2002. In fact, between 1987 and 2002, Calvert lost farmland at a higher rate than any other county in Maryland except Montgomery (Maryland Department of Planning 2004a). Interestingly, though, Calvert has more land under protective easements than most other counties in Maryland. As of August 2005, approximately 23,500 acres, or 77 percent of all agricultural land, was in a permanent easement status (Calvert County 2006, 2004).[10] As we will describe below, the TDR program has contributed significantly to this accomplishment.

Calvert County's TDR Program

In 1967, Calvert County adopted its first comprehensive plan, in which all rural land was zoned to a maximum density of 1 dwelling unit per 3 acres. This zoning was put in place as a partial response to farmland conversion. In 1975, the county updated the plan to reflect a "slow growth" goal and changed the maximum density to 1 dwelling unit per 5 acres. Even with the 1:5 limit, however, substantial population growth and conversion of land from agricultural uses to housing developments continued throughout the county. To protect prime farmland from further development, in 1978 the county set up a TDR program. There was no initial downzoning when the program was adopted; rather, the county chose to rely on the incentives provided through TDRs to preserve land.

As TDR receiving regions, the Calvert program targeted town centers, residential zones, and some rural areas known as rural community districts, which contain some farmland and some low-density residential developments. An unusual feature of the program is that land in the rural community districts has always been permitted to be either a receiving or a sending area for TDRs. Thus the Calvert program is best characterized by Figure 2.2, in which there is an overlap in sending and receiving areas (i.e., the rural community district would be area E in the example). The remaining rural land was identified as prime farmland and became known as the designated agricultural areas, later changed in 1992 to farm community districts and resource preservation districts when some additional areas were added.[11] Parcels in these prime farmland areas could originally be used only as TDR sending areas. A little over 40 percent of the county land area lies in the rural community districts, another 40 percent is in the farm community and resource preservation districts, and about 16 percent lies in the residential and town center zones.

Several significant changes to Calvert's TDR program have been made over the years. Most important, both sending and receiving areas have been downzoned and density bonuses have increased; in addition, the designation of receiving areas has also changed. Table 3.1 summarizes the residential density limits imposed by zoning regulations in Calvert County from the time the TDR program was adopted in 1978 to the present. As can be seen in the table, from 1978 until a countywide downzoning in 1999, the baseline zoning in all rural areas was 1 dwelling unit per 5 acres.

TABLE 3.1

DENSITY LIMITS IN CALVERT COUNTY

	Rural		Residential		Town Centers*
	Farm community districts, resource preservation districts	**Rural community districts**	**R-1**	**R-2****	
1978–1998					
Baseline density	1 du/5 ac	1 du/5 ac	1 du/ac	14 du/ac	1 du/ac
Density with TDRs	—	1 du/2.5 ac	4 du/ac	14 du/ac	14 du/ac
1999–2003					
Baseline density	1 du/10 ac	1 du/10 ac	1 du/2 ac	—	1 du/ac
Density with TDRs	1 du/5 ac	1 du/2 ac***	1 du/ac***	—	14 du/ac
2003–present**					
Baseline density	1 du/20 ac	1 du/20 ac	1 du/4 ac	—	
Density with TDRs	1 du/10 ac	1 du/4 ac***	1 du/2 ac***	—	

* Town center density limits vary; the limits listed in the table are representative.
** All residential areas have the same zoning after 1999.
*** With TDRs, density in a rural community district can go as high as 1 du/ac within 1 mile of a town center; density in residential zones can go as high as 4 du/ac within 1 mile of a town center.
****A new zoning ordinance took effect in May 2006, but the density limits, both with and without TDRs, did not change.

Notes: The town center zoning classification came into effect in 1983. Farm community districts and resource preservation districts came into effect in 1992; designated agricultural areas were TDR sending areas before this time and the 1 du/5 ac limits applied there. In the May 2006 Comprehensive Zoning Ordinance, the county combined the farm community and resource preservation districts into a single designation, farm and forest district.

In 1999, because of rapid growth in the region, the entire county was downzoned by 50 percent to reduce overall development. Thus, the baseline limits on dwelling units per acre were cut in half. Density permitted with TDRs, however, remained the same as before the downzoning. Thus the pre-1999 maximum density levels in all areas could still be attained, but only with the purchase of more TDRs. As Table 3.1 shows, after 1999, farm community and resource preservation districts had a baseline density limit of 1 du/10 ac but 1:5 with TDRs; in residential areas, baseline limits were 1:2 but 1:1 with TDRs; and rural community districts had a baseline limit of 1:10 but 1:2 with TDRs. The downzoning was adopted in part to reduce growth but also to encourage the use of TDRs.

In 2003, yet another 50 percent downzoning took effect. Farm community and resource preservation districts were changed from 1 du/10 ac baseline density to 1 du/20 ac. TDRs could be used to increase density in those areas but only to 1 du/10 ac. Rural community districts were also downzoned to 1:20; with TDRs, parcels in those zones could be developed to 1:4. Residen-

tial areas were downzoned to 1:4 baseline and 1:2 with TDRs. Land within one mile of a town center could still be developed more densely. The 2003 zoning ordinance thus set more restrictive limits across the board, both with and without TDRs. The county passed a new zoning ordinance in May 2006 but made no changes to the density limits established in the 2003 ordinance.

The density bonus—defined as the ratio of the additional density allowed with TDRs over the baseline density—is greater in the residential and town center areas, but as we will see below, most of the demand for TDRs has been in the rural community districts. With the downzonings in 1999 and 2003, the density bonuses increased. In these zones, the density bonus increased from 150 to 400 percent in 1999, and in R-1, the bonus increased from 300 to 700 percent.

Developers are required to use 5 TDRs to build 1 additional dwelling unit in a receiving area. This feature of the program has remained the same over the years.

Any property in Calvert's rural areas that is large enough to undertake farming activities (minimum 50 acres) and be in active agricultural or forestry use is eligible to offer development rights for sale.[12] The property owner must first submit an application to the county to form an agricultural preservation district. By establishing such a district, the property owner agrees to keep the land in agricultural or forest use for at least five years, over which time the owner is exempt from county property taxes. After this time, the owner may remove the property from agricultural preservation status. While in this status, however, the landowner is eligible to certify and sell TDRs from the property at any time.

Approximately 1 development right is granted for each agricultural preservation district acre.[13] The land is not in permanent easement status—that happens only after the first TDR is sold. Interestingly, once the first TDR is sold, the entire property is under an easement. Thus, unlike many programs, where some residual development rights are retained until all TDRs are sold, no development can take place on a property in Calvert County once a single TDR is sold from that property.

Receiving areas in Calvert are broadly designated and TDR use is "by right." There is no board of county commissioners hearing or other requirement for TDR use. No brokers have operated in Calvert; buyers (developers) and sellers (landowners) contact each other directly and agree on the terms of the sale. Interested parties obtain information from a county newsletter about the program and from information kept by the county Department of Planning and Zoning. In addition, since 1993, the county has been directly participating in the TDR market through its "purchase and retire" (PAR) and "leverage and retire" (LAR) programs.[14] The county announces, at the beginning of the year, the price at which it will purchase development rights in these programs, thus providing further information to the private TDR market. The rights purchased by the county are retired, not resold.

Table 3.2 provides a summary of basic information about the Calvert TDR program as it stands today. Sending areas are all rural areas, which total 111,600 acres of land. However these same lands can be receiving areas for TDRs, though the emphasis now is on having new TDR developments go into the town centers and rural community districts within one mile of the town centers.

TABLE 3.2

FEATURES OF CALVERT COUNTY'S TDR PROGRAM

Year established	1978
Land area	137,700 acres
General information	
Program goal is preservation of prime farmland and forestlands; target is 40,000 acres preserved through all land preservation programs.	
TDR sale and use are "by right."	
Sale of 1 TDR puts permanent easement on entire sending parcel acreage; no development allowed.	
Overlap in sending and receiving area on some rural lands (rural community districts and since 1999, farm and forest district)—that is, landowners can either sell TDRs or use TDRs to develop more densely than baseline density limits.	
Sending areas	
Farm and forest districts and rural community districts[1]	
Land area	111,600 acres
Baseline density limit	1 du/20 acres[2]
TDR allocation rate	1 TDR/acre[3]
Receiving areas	
Residential areas, town centers, rural community districts, and farm and forest districts	
Residential areas	
Land area	12,100 acres
Baseline density limit	1 du/4 acres
Density limit with TDRs	1 du/2 acres
Density limit with TDRs if within 1 mile of town center	4 du/acre
Town centers	
Land area	14,000 acres
Baseline density limit	1 du/acre
Density limit with TDRs	14 dus/acre
Rural community districts	
Land area	55,100 acres
Baseline density limit	1 du/20 acres
Density limit with TDRs	1 du/4 acres
Density limit with TDRs if within 1 mile of a TC	1 du/acre
Farm and forest districts	
Land area	56,500 acres
Baseline density limit	1 du/20 acres
Density limit with TDRs	1 du/10 acres

1. Prior to 2006, farm and forest districts were separated into resource preservation districts and farm community districts

2. These limits are effective as of 2003; between 1999 and 2003, the limits were 1 du/10 ac and prior to 1999, 1 du/5 ac.

3. Adjustments made for existing residence on property.

Program Results

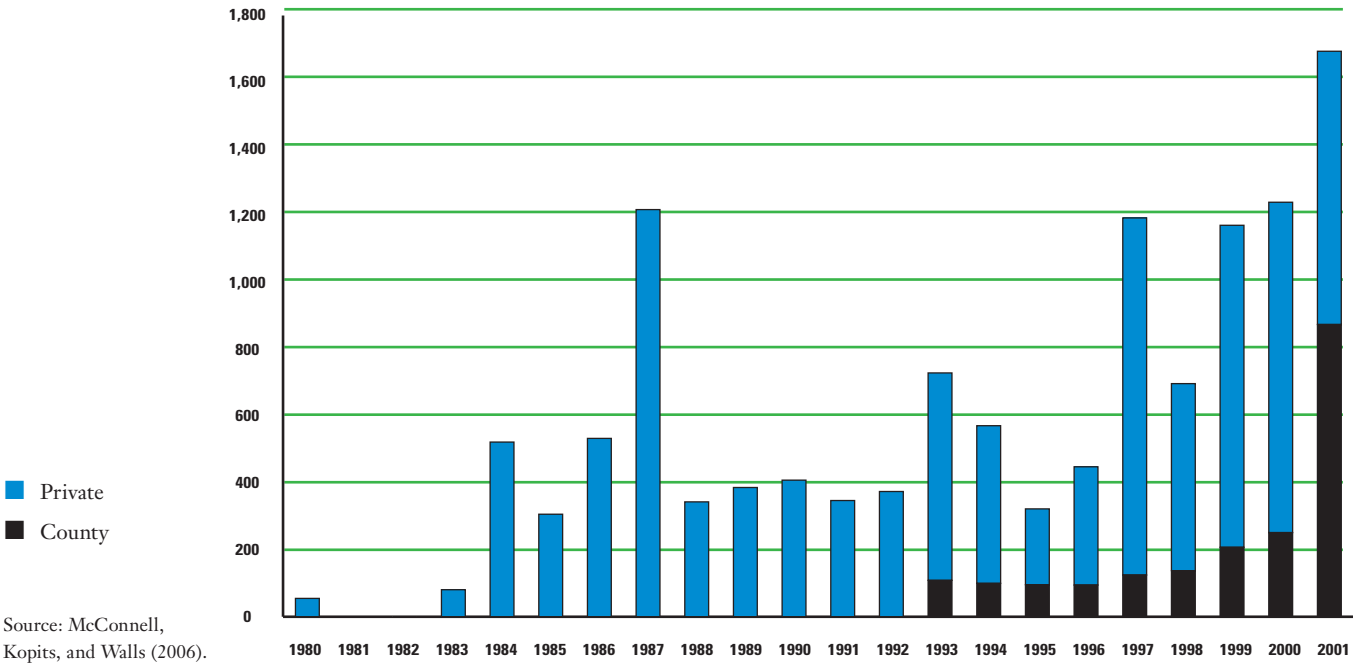
Calvert County's program has been very successful in terms of acres preserved. Recent county estimates are that by the end of 2006, private TDR sales had preserved more than 12,200 acres of farm and forestlands, with the county's PAR and LAR programs contributing another 5,500 acres (Bowen 2007). Total land preserved through state, county, and private programs as of the end of 2006 was 24,600 acres (Bowen 2007). Thus nearly 18 percent of the total county land area is under a conservation easement and permanently protected from development.

Figure 3.2, from a detailed study of the Calvert program by McConnell et al. (2006a), shows the number of TDRs sold since the program's inception, including both sales to private buyers and sales to the county government through the PAR and LAR programs. There were few sales in the early years, and then large fluctuations in sales through the latter part of the 1980s.[15] Sales have steadily risen, from the 1990s through 2001.

McConnell et al. (2006a) also analyze individual TDR sales prices over time. They find that from 1983 to 2001, the average real price of a TDR rose by 6.3 percent per year. However, most of the increase occurred in the first decade of the program. Between 1983 and 1993, the average real price more than doubled, from $1,211 (in 1999 dollars) to $2,578. Between 1993 and 2001, however, real prices remained relatively constant. The average real TDR price in 2001 was $2,582, virtually the same as it was in 1993. These authors also find that the variance in prices across sales has declined dramatically. In 1990, the range in prices across all TDR transactions was relatively wide: 50 percent of all transactions occurred at prices between $1,209 and $2,780 (in 1999 dollars). In 1999, 50 percent of all transactions occurred at prices between $2,400 and $2,600; in fact, the minimum and maximum TDR prices in 1999 were only $600 apart, $2,200 and $2,800, respectively.

FIGURE 3.2

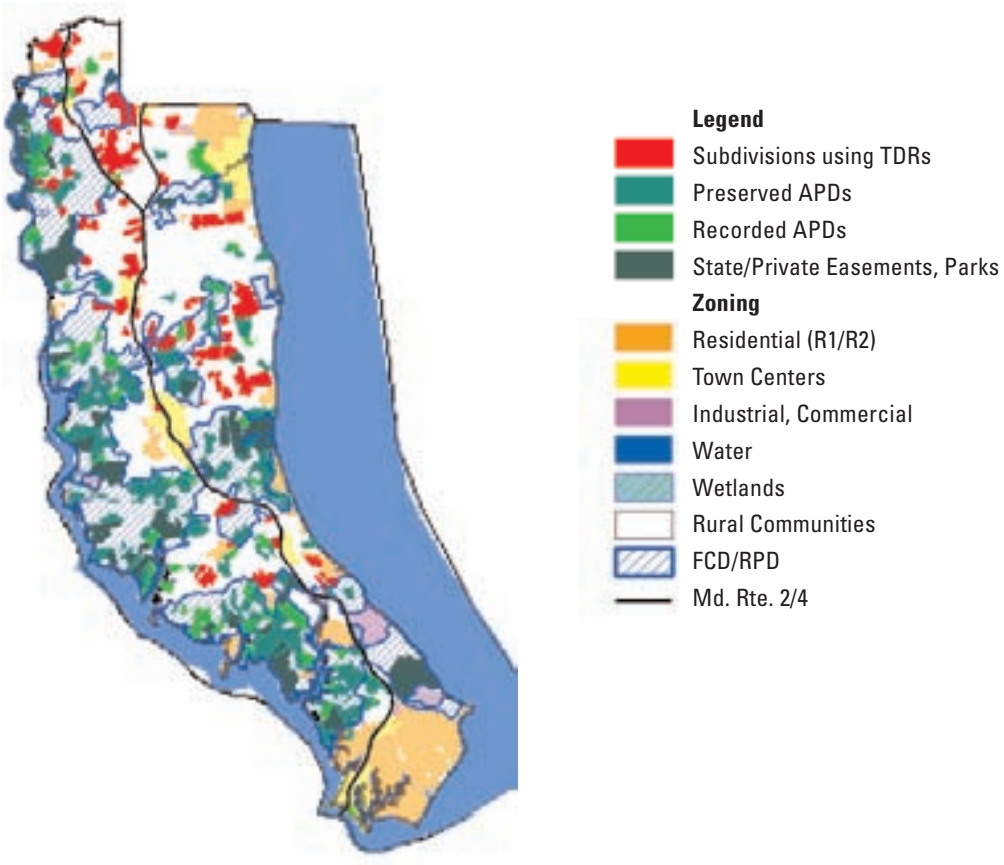
TDR SALES IN CALVERT COUNTY, 1980–2001



Source: McConnell, Kopits, and Walls (2006).

FIGURE 3.3

LANDS PRESERVED AND DEVELOPED WITH TDRS IN CALVERT COUNTY, 1980–2001



Source: McConnell, Kopits, and Walls (2006a). APDs are agricultural preservation districts; the first step in selling TDRs is placing farmland in APD.

With the countywide downzonings in 1999 and 2003, TDR prices have risen further in recent years. Bowen (2006) reports that in May 2006, TDR prices in private sales were ranging between $6,500 and $7,500.[16] Since 5 TDRs are required for each additional dwelling unit built, this means that TDRs currently add about $35,000 to the cost of building a house in a new subdivision.

Figure 3.3, reprinted from McConnell et al. (2006a), shows the location of all agricultural preservation districts, preserved properties, and subdivisions recorded between 1980 and 2001 in Calvert County, along with zoning districts. The green area shows permanently preserved acreage, and light green is land that is in agricultural preservation status but has not yet sold TDRs. Areas shaded red are subdivisions that used TDRs for additional development. These outcomes are overlaid on the zoning: yellow and orange areas are town centers and residential areas, respectively; purple is commercial-industrial zones; white is rural community districts; and the hatched areas outlined in blue are the farm community and resource preservation districts, the prime agricultural lands.

Several observations can be drawn from Figure 3.3. First, most properties that have entered the agricultural preservation program lie within the farm community and resource preservation districts, the areas targeted for preservation. Although some green areas are within rural community districts, 79 percent of all preserved acreage (medium green) and 73 percent of remaining agricultural preservation district (APD) acreage (light green) lie in farm community and re-

source preservation zones. Second, the map shows that TDRs were used almost exclusively in developments in the rural community districts. Third, as we would expect, most development has occurred in the northern area of the county, and this region has seen the most use of TDRs. Most preserved acreage lies in the central and southern parts of the county; in fact, the earliest farms to enter the program were those in south. Finally, the TDR program has not prohibited development in the farm community and resource preservation areas. Although not shown on the map, some subdivisions have gone into these districts. Until 1999, the density limits there allowed 1 house per 5 acres, and some farms were converted to subdivisions. Development of these regions has slowed dramatically in recent years, however.

It is interesting to also observe what has occurred in Calvert in the past few years. Before the 1999 downzoning, only 8 percent of new subdivisions in the residential and town center zones used TDRs; between 1999 and 2002, 57 percent in these same areas used TDRs. TDR use for development has increased greatly across the board with the 1999 and 2003 downzonings. According to Greg Bowen, director of planning and zoning, these downzonings and the changes in the relative density bonuses in the different areas have reduced building in the farm community and resource preservation districts. In 2005, only 1 percent of all new lots recorded were in the these zones, an area of 57,000 acres, roughly 40 percent of the county land area (Bowen 2006). The map in Figure 3.3, if updated with data from the 2001–2005 period, would show more red areas in the residential zones and in the resource preservation districts closer to town centers.

Conclusions

Calvert County's TDR program has been more successful than most—the TDR market is robust, with a substantial number of development rights bought and sold each year, and a significant amount of farmland acreage has been preserved. The county has a goal, articulated in its comprehensive plan, of protecting 40,000 acres of farmland and forested lands. As of December 31, 2006, it was nearly 62 percent of the way there, in large part as a result of its TDR program. It is also worth noting that if the 12,200 acres preserved by TDRs since 1978 had been preserved through the county's purchase of development rights programs, the cost to the county government would have been about $11.6 million. Thus, a reliance purely on a PDR approach would most likely have been beyond county's fiscal reach.

Although there are many other aspects of TDR programs that can determine success or failure, it is certainly a prerequisite that the TDR market be well functioning. If no TDRs are bought and sold, the program cannot work. In our view, Calvert County's market has worked well for several reasons:

- The fact that receiving areas are broadly designated and use of TDRs is "by right"—no special approval by the board of county commissioners is required—tends to ward off complaints from existing residents over additional density.
- The fact that properties in the rural community districts can be receiving areas bolstered demand for TDRs. Many TDR programs around the country have willing sellers who cannot find buyers for their development rights; this is not the case in Calvert County.
- The county has played an active role in providing information about the program and participating directly in the market to purchase and retire development rights. Our earlier analysis of

individual TDR sales data showed clearly that prices stabilized when the county began to participate in the market. Stable prices are critical to a well-functioning program.

- The downzonings and changes in density bonuses that allowed developers to get back to pre-downzoning density limits by purchasing TDRs were very successful in bolstering demand. Also, because the downzonings were across the board, the county avoided creating winners and losers.

In addition to the healthy TDR market, another reason that farm and forest acreage has been preserved from development in Calvert County is a unique program feature: when the first TDR is sold from a property, the entire acreage of the property is placed under a conservation easement. Calvert County has been criticized for not having initially downzoned its agricultural land (though it has downzoned quite dramatically in recent years), but this feature of the program has led to significantly higher levels of preserved acreage than would otherwise be the case. It also means that Calvert County is avoiding the problem currently facing Montgomery County, where the remaining development rights on many properties are highly valuable and thus difficult to retire (Chapter 4).

Planning Director Greg Bowen sees another virtue of Calvert County's TDR program: the county can use TDRs as leverage to achieve other land use and development objectives. For example, developers may be permitted density beyond zoning limits without the use of TDRs if they are building affordable or senior housing. Thus, dropping the TDR requirement is used as an incentive to obtain specific kinds of housing that the county deems desirable. Because landowners and developers in the county are so accustomed to TDRs and the market functions so well there, this ancillary benefit from TDRs can be realized in Calvert County; this may not be the case in many locations. In addition, rent-seeking behavior by landowners and developers trying to obtain favorable zoning on particular properties—a common activity in many communities—is generally avoided in Calvert because of TDRs. The rent-seeking costs of zoning, and benefits of TDRs, have long been acknowledged by economists (see Mills 1989, for example).

The most common criticism of the Calvert County program is that TDRs can be used in rural receiving areas. Our view is that this aspect of the program probably explains why TDRs are widely used in Calvert County and nearly 12,000 acres of farmland has been preserved. An analysis of development in the county over the past 35 years indicates that it is unlikely that the program would have worked as well if receiving areas had been limited to town centers and residential zones. When the county set up its TDR program, it felt that downzoning the rural areas was infeasible—the same situation that many counties consider themselves in today—and essentially made a trade-off: "sacrifice" some rural areas to permanently preserve land in other areas. Without the counterfactual, it is difficult to evaluate the land use outcomes in the county, but it is quite possible that there would have been very little demand for TDRs and that development would have continued at baseline density limits in all of the rural areas. In fact, we believe that this would have been the outcome. As we will see in Chapter 7, this problem arose in Queen Anne County when its TDR program limited receiving areas.

Interestingly, in 2006 the tide started to turn in Calvert County. Because of the recent downzonings, TDRs are being used more in the residential and town center areas and development of the farm and forest districts has declined sharply. It will be fascinating to observe the patterns of land preservation and development in the county in the coming years.

CHAPTER 4

Montgomery County, Maryland: Linking TDRs to Bold Downzoning

The Montgomery County program, established in 1980, was one of the first TDR programs in the United States, and it remains a major component of farmland preservation efforts in the county. A salient feature of the program is the downzoning of a large area of farmland in the north and west to protect it from development; the development rights that were taken away can be transferred to other areas of the county that were designated for higher density. In this way, it is quite different from Calvert, which did not initially downzone any land. The Montgomery County program has long been considered one of the most successful in the United States, preserving almost 49,000 acres. Over its long history, however, it has also been plagued by a number of problems. Using data on development trends and TDR sales and use, we are able to analyze program results more fully than previous studies have been able to do. Lessons learned are summarized in the conclusion.

Background on Montgomery County

Montgomery County, just north and west of the city of Washington, D.C, is a central suburb of the metropolitan region (see the map of Maryland, Figure 3.1). It is the most populous county in Maryland, with a population of 922,000 in 2005. Despite a long tradition of farming in parts of the county, extensive development has taken place in recent years, and Montgomery is currently the most densely populated jurisdiction in the state except for Baltimore City. Montgomery is also a wealthy county, with a median household income of $76,546 in 2003[17]—one of the highest of all counties in the United States. Like many counties in Maryland, it has faced intense competition for land in recent years between development and more traditional agricultural and rural uses. Housing prices reflect this pressure, with real house prices doubling in the past 10 years to a median price of more than $430,000 in 2005.

The county has a history of attention to planning for growth and development. The first comprehensive land use plan, adopted in 1964, emphasized a broad concept of radiating corridors of development with wedges of green spaces and rural land uses.[18] In addition to countywide planning, there are 35 local planning areas. Each planning area is responsible for its own

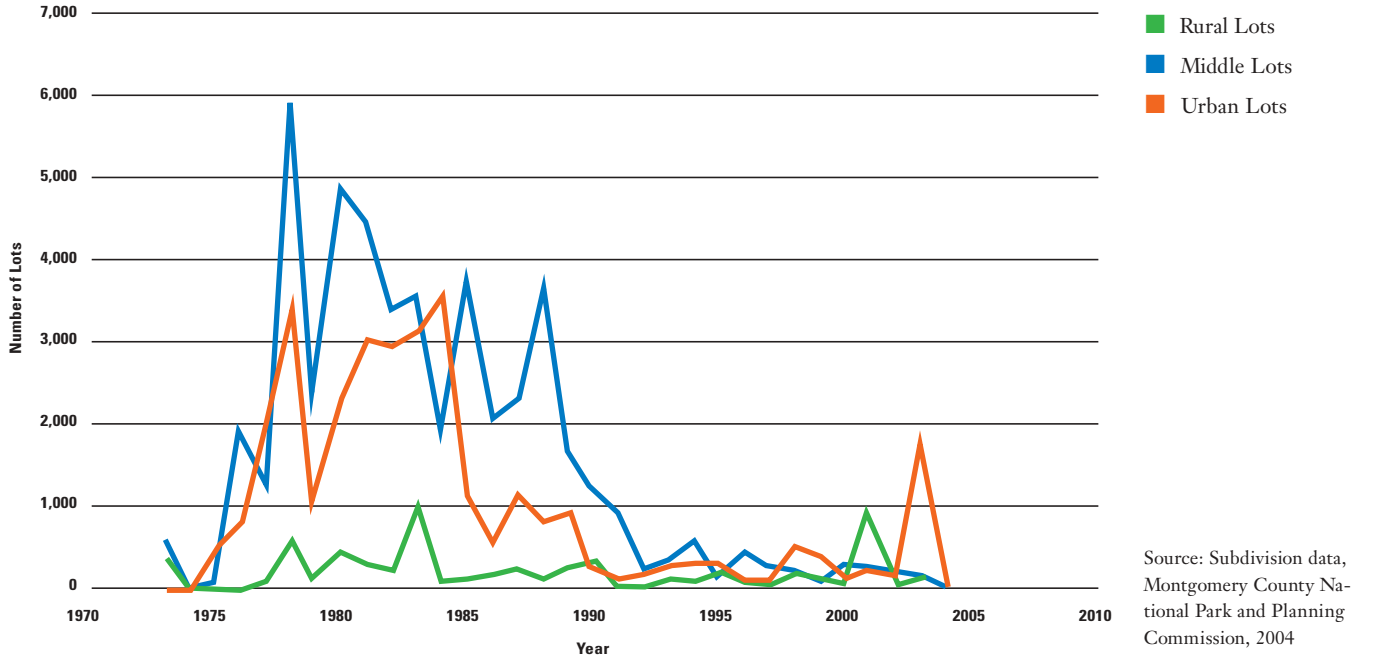
master plan for development, which includes zoning and regulations for current development and provides direction for future land use changes. Master plans for each area are prepared by the county planning board in consultation with area citizens and the county executive and are revised every 5 to 10 years.

Drawing on data obtained from the county on all subdivisions built from 1972 to 2004, we can examine trends in development.[19] We divide the county into three regions based on the location and pattern of development.[20] Figure 4.1 shows the number of lots built by year in each of three major regions of the county. The urban area includes the Capital Beltway and the major central business district of Bethesda; the midcounty section is composed of large town centers, such as Rockville and Gaithersburg, and the rural area is made up of the outlying and primarily rural areas. This last region also includes the planning area of Clarksburg, which has long been earmarked as the last major town to be developed in Montgomery County. It is clear from the figure that the majority of building occurred in both the urban and midcounty sections before 1990, and that development has been relatively low in rural areas throughout the period since 1973. The recent increase in rural development is the result of initial building in Clarksburg. In addition, there has been some increase recently in lots in the urban region because of urban redevelopment in the town of Bethesda. Overall, the county has experienced a great deal of development, especially in the decade of the 1990s.

Montgomery County has seen a sharp decline in agricultural activity since the 1950s. Farm acreage dropped from 215,000 acres in 1949 to 75,000 in 2002 (U.S. Department of Agriculture 2002). Almost all of this decline took place prior to 1978, however. And although overall acreage in farming has declined, land in crop production has remained relatively constant since

FIGURE 4.1

LOTS IN NEW SUBDIVISIONS, MONTGOMERY COUNTY, BY REGION AND YEAR OF SUBDIVISION



Source: Subdivision data, Montgomery County National Park and Planning Commission, 2004

about 1970, before the TDR program was established. The greatest declines have been in acres in livestock enterprises, particularly beef cattle and hog farming. Traditional agricultural crops including corn, hay, and alfalfa have declined, but others appear to have taken their place. There is more land in soybeans, nurseries, vegetable farms, and horse and pony farming.[21] The increase in these types of uses accounts for the fact that, since 1997, the number of farms in the county has actually increased, though many of them are small.[22] Finally, there is an upward trend over time in the value of cropland sales, driven in large part by nursery and greenhouse products.[23]

Montgomery County's TDR Program

The original reason for implementing a TDR program in Montgomery County was to preserve the agricultural lands in the northern and western parts of the county. To achieve this goal, more than 90,000 acres (close to a third of the county) was designated as a rural zone in the 1970s, with minimum 5-acre lot zoning. In 1980, the county took the bold step of downzoning this entire area to a maximum of 1 dwelling unit per 25 acres, to discourage residential development.[24] The area was designated an agricultural reserve.

The TDR program was implemented as a way to compensate farmers for the loss in value from the downzoning. It allowed the development rights at the previous (5-acre) density rate to be sold from properties in the rural density transfer zone, which covered much of the agricultural reserve. Thus the rural density transfer zone served as the sending area for the program. Areas with public services and infrastructure were allowed to be TDR receiving areas. The costs of purchasing a TDR were seen by the county as a transfer of funds from the developed areas back to the rural economy. Landowners in the rural density transfer zone, however, continue to have the right to build at a density of 1 du/ 25 ac (if development conditions permit), even if some of the development rights have been sold. For example, for each 25 acres, an owner could sell four rights and keep one.

To build an additional unit of housing in the receiving areas beyond what is allowed by baseline density limits, one TDR must be purchased. In the original program, it was thought that receiving area capacity should roughly match the number of TDRs that could be sold from the rural density transfer zone. Until about 1992, there were close to 12,000 units of capacity designated in receiving areas.

Each planning area is responsible for designating specific receiving areas within its boundaries, based on the potential to take on density over and above the baseline density limits. TDRs are not allowed in the rural areas, nor are they allowed in the highest zoning regions, such as in townhouse developments or central business district and transit areas. Table 4.1 shows the zoning categories and the number of potential TDRs that were permitted to be used in each zoning category.

The last column in the table shows the maximum number of TDRs that can be used in each zoning category. However, the number that can actually be used in any one area is further constrained. Receiving areas are officially created only through the master plan process in each planning area. Properties are nominated as receiving areas based on the available or planned infrastructure to accommodate higher density. Many planning areas do not designate TDR receiving areas at all. For those that do specify receiving areas, the actual allowed density for any particular TDR designated area is determined on a case-by-case basis, with the developers, county plan-

TABLE 4.1

MONTGOMERY COUNTY ZONING CHART

Zoning category	Description	Baseline maximum density (lots/acre)	Maximum allowable density with TDRs
R-10[1]	Multiple-family, high-density residential homes	53.07	100
R-20[1]	Multiple-family, high-density residential homes	25.47	50
R-30[1]	Multiple-family, medium-density residential homes with a TDR option	17.69	40
RT-6 to RT-15	Residential townhouses	6 to 15 units	N.A.
R-60[2]	Residential detached single-family	615	
R-90[2]	Residential detached single-family	49	
R-150[2]	Residential detached single-family	35	
R-200[2]	Residential detached single-family	211	
RE-1	Residential single-family	12	
RE-2	Residential single-family	0.5	4
RR[2]	Rural residential	0.2	N.A.
RDT	Rural density transfer zone	0.04	TDRs can be transferred off to receiving areas

1. The high-density R-10, R-20, and R-30 zones are able to add two extra units of density for every one TDR purchased. However, no TDRs have been used in these areas, as we discuss below.

2. These zoning categories also have a clustering option.

ners, and the public all participating in the process. That allowed density is usually much lower than the maximum shown in Table 4.1. This feature is often overlooked in descriptions of the Montgomery County program.

Another aspect that is usually not highlighted is the county's requirement that a minimum number of TDRs be used in any development using TDRs. Developers must use at least two-thirds of the maximum number of TDRs allowed in a particular location. This was an attempt to create a strong demand for TDRs in receiving areas. However, developers can get exemptions. If there are environmental considerations that prevent the use of the full two-thirds number, for example, or if there are incompatible uses in surrounding land areas, then an exemption may be granted. As Table 4.2 shows, about 70 percent of subdivisions have been built meeting the two-thirds requirement for TDRs, but 30 percent have not. The constraint adds an additional hurdle for developers. Either they must meet the requirement or go through the process of requesting an exemption, and the exemption process adds time and expense to the TDR approval process.

Table 4.2 also shows the number of TDR subdivisions relative to total subdivisions built over the 1981–2004 period. Only 4 percent of all subdivisions over this period used TDRs.

There is no central clearinghouse for information about TDR transactions or prices in Montgomery County. The TDR market is operated solely through independent real estate agents. There are several agents who specialize in the sale of TDRs and act as brokers between potential sellers and buyers. The county makes information available by directing potential buyers of TDRs to those real estate agents. In addition, the Department of Economic Development's Agricultural Services Division explains the TDR program to farmers and, in an informal way, will provide information about past transactions. But there is no newsletter or any other mechanism for making information about prices available to potential participants. The county intended that there would be a TDR bank when the program was established, but no banking system has evolved.

The staff of the Agricultural Services Division makes an estimate of each year's average sales price, based on information from real estate agents making TDR transactions. Prices have fluctuated a good deal since the program's inception, falling in the early years, and then again in the late 1990s. The price of a TDR was as low as $7,000 in 2000, but recently, demand for TDRs has surged because of developments in the new town of Clarksburg. The price of some TDR sales in recent months has been as high as $45,000 per right.

Program Results

Montgomery County's TDR program is often held up as the most successful in the country. On the basis of acres of farmland preserved, it is difficult to argue with this conclusion. As of May 2006, 48,584 acres had been preserved through the sale of TDRs, more than half of the rural density transfer zone. With total preserved farmland at 65,000 acres, this means that TDRs account for almost 75 percent of all preserved farmland in the county. The remainder is in land trusts and county and state easement programs.

It can be argued that when there is downzoning to 1 du/25 ac, as in Montgomery County, the preservation that does occur is a result of the downzoning and not the TDR program. The development rights for building at the previous zoning of one unit on 5 acres can no longer be used after the downzoning, and the TDR program simply provides some compensation to landowners for

TABLE 4.2

SUBDIVISIONS BUILT IN MONTGOMERY COUNTY, 1981 TO 2004

Total subdivisions	2,122		
Total subdivisions in non-TDR zones		1,995	
Total subdivisions in TDR zones		127	
Total subdivisions not using TDRs in TDR zones			45
Total subdivisions using TDRs in TDR zones			82
TDR subdivisions at or above the 2/3 constraint			62
TDR subdivisions below the 2/3 constraint			25

the lost development value. However, the TDR program must maintain an active market to ensure that the compensation does occur and that the properties are brought under permanent easement through the TDR process.[25]

It is interesting to consider how much it would have cost the county to purchase easements on the rural density transfer properties. Based on average TDR sale prices, the savings in public expenditures for the amount of land preserved thus far under the TDR program is roughly $68 million.[26]

The major goal of the Montgomery County downzoning and TDR program was to ensure that the large area designated for farmland preservation, the rural density transfer zone, was not developed. Although the TDR program has recorded a large amount of preserved acreage, some development has continued in this region, and recently, there has been a trend toward higher premiums paid for the right to build to the density limit of 1 du/25 ac. One recent example is an 800-acre parcel near the Potomac River. Property owners have claimed the right to build 32 units (800 acres/25 acres per unit), and currently they have been granted rights to build 28 units.[27]

Some county officials and community groups argue that any development of small estates, even on clustered lots, does not maintain the land in farming, as had been intended.[28] Others argue that some development in the region can be consistent with the agricultural uses. Development in the rural density transfer zone does allow clustering on smaller lots in some cases. This can mean that large areas of rural land can still be leased for farming or other rural purposes. For example, on a 200-acre parcel, if 8 houses are clustered on 2-acre lots, the average density would still be 1 du/25 ac, but 184 acres would be available for farming or forestry uses because of the clustering.

The value of development in Montgomery County, even at density limits of 1 du/25 ac, has had an interesting impact on TDR prices. Effectively, two separate markets for TDRs have arisen: one market for the TDRs that cannot be used for development, and one for the TDRs that can be used to build at a density of 1:25. These latter TDRs are sometimes referred to as "super TDRs." Taking the example of the 200-acre property, there is the potential for creating 40 TDRs in total: 200/5. But 8 of these convey a right to build at 1:25, whereas the other 32 have value only if they are sold and transferred to a receiving area. The price of a transferable TDR is currently about $20,000, but the price of a super TDR may be 10 or 20 times that because of the high development value. Currently, a super TDR can be sold for an estimated $200,000 to $500,000, depending or how rules about allowable septic systems are resolved.[29] Many of these TDRs have not been sold from the rural density transfer region, and it is now clear that these TDRs constitute a separate market. The county is considering ways that they might be purchased or sold separately.[30]

To analyze the results of the TDR program, we have created a data set that includes information on all the subdivisions built in the county since 1974, including all those that used TDRs after the program began in 1980. We know the allowed zoning at each subdivision site and the actual number of units developed, including the TDRs used. Figure 4.2 shows the location of the subdivisions in the data set, both those that used TDRs and those that did not. As described above, the planning areas designate which sites, if any, are allowed to use TDRs. A relatively small number of subdivisions have used TDRs, a point also clear from Table 4.2 (above). Figure 4.2 shows that the TDR subdivisions are not concentrated in any one area of the county. They tend to be in suburban areas, rather than the most densely populated towns or close to the Capital Beltway.

FIGURE 4.2

TDR SUBDIVISIONS, MONTGOMERY COUNTY, 1973–2004

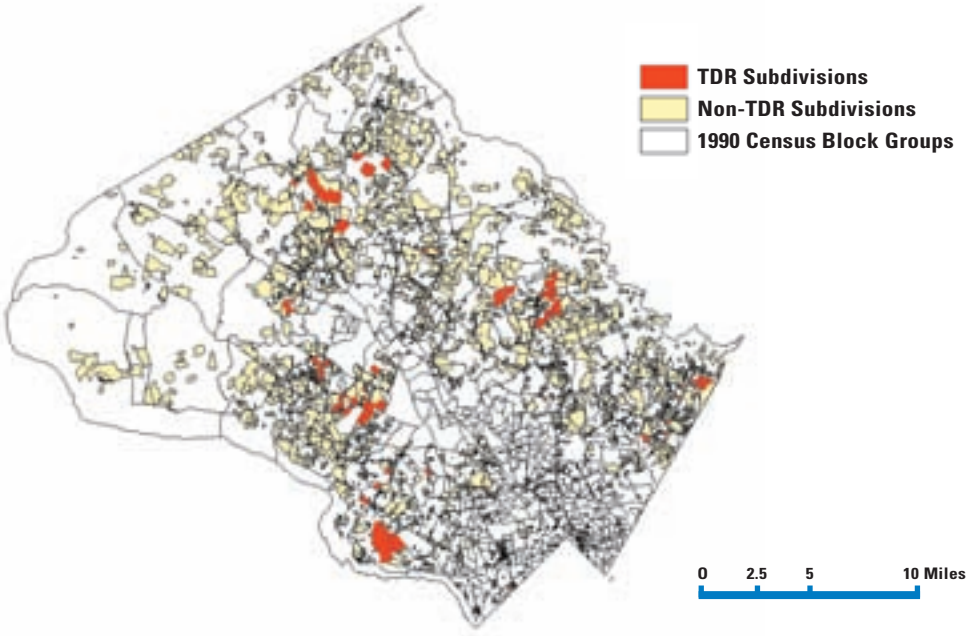


Figure 4.3 shows TDR use over time. Clearly, most of the activity in the Montgomery County TDR market took place in the earlier years of the program. TDR use in receiving areas was at its highest in 1983. In the late 1990s, TDR use dropped to zero. In part, the reduction in TDR use was due to a general decline in building. As Figure 4.1 (above) shows, the number of lots in new subdivisions has been declining in Montgomery County since the late 1980s. But the problem is also a decline activity in the TDR market, driven mostly by a lack of demand for TDRs.

The original intent of county planners was to push the planning areas to create about as much receiving area capacity as would absorb the total TDRs that would be sold from the sending areas. A large number of TDR receiving areas with substantial capacity for additional density were created during the early years, and it was expected that more would be added over time. Two problems emerged: first, not all of the TDR capacity was used when the original receiving areas were developed, and second, few receiving areas were added later.

A handful of planning areas did designate relatively large receiving areas early in the program, including Olney, Fairland,[31] and Travilah. But other jurisdictions have been less willing to add to the potential pool of TDR receiving areas, and many have no TDR regions at all. Those that do designate TDR locations often set the number of TDRs well below the level allowed by the county. Further limiting the demand for TDRs is that fact that developers often use fewer than the allowed number of TDRs or none at all, even in regions where they would be allowed. The two-thirds rule described above may have dissuaded some developers from using any TDRs.[32]

Figure 4.4 give some detail about those issues. For each zoning category, it shows the difference between the theoretical maximum that could have been used according to the zoning limits set by the county, the total maximum established by the master plans for all the planning areas, and then the actual number used by developers. The results reveal that most planning areas designated fairly low-density zoning districts as TDR receiving areas. The R-200 (2 du/1 ac)

and the RE-2 (1 du/2 ac) have the largest number of both potential and planning area-designated TDRs. Moreover, there are substantial leakages from the potential demand for TDRs to the number actually used in these same two categories.

In the R-200 areas, up to 9 extra lots (11 lot in total) could in principle be allowed with TDRs, but when deciding on the actual density allowed, the planning areas permitted, on average across subdivisions, only an additional 3 lots per acre (5 lots in total) with TDRs. Then, developers used, on average, only 24 percent of the number available. In fact, many subdivisions built in R-200 TDR areas did not use TDRs at all. For the RE-2 areas, the county zoning code

FIGURE 4.3

ANNUAL TDR USE IN RECEIVING AREAS IN MONTGOMERY COUNTY

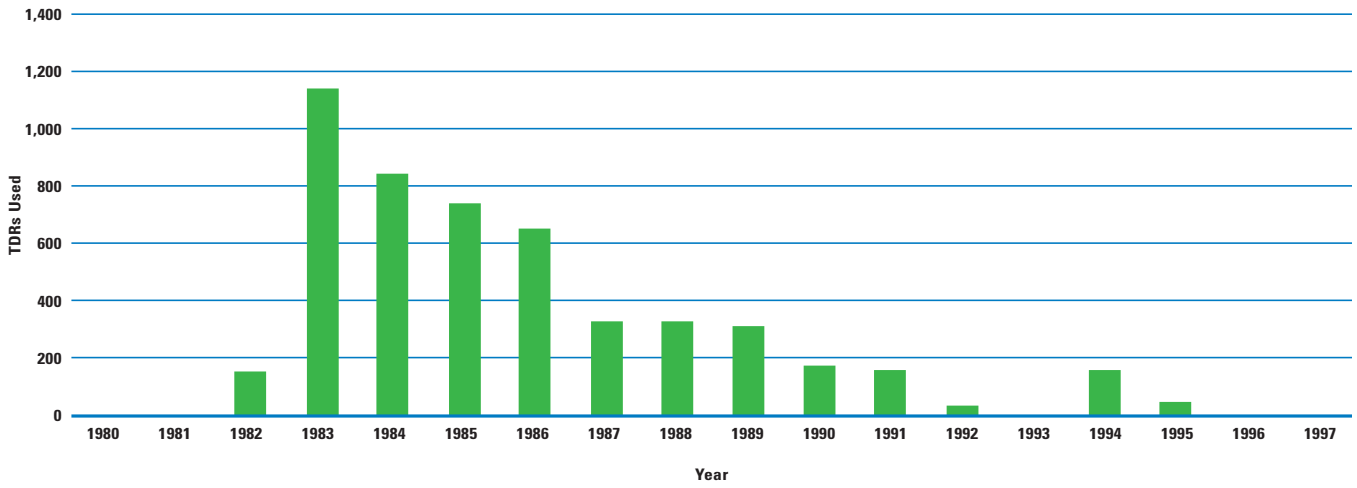
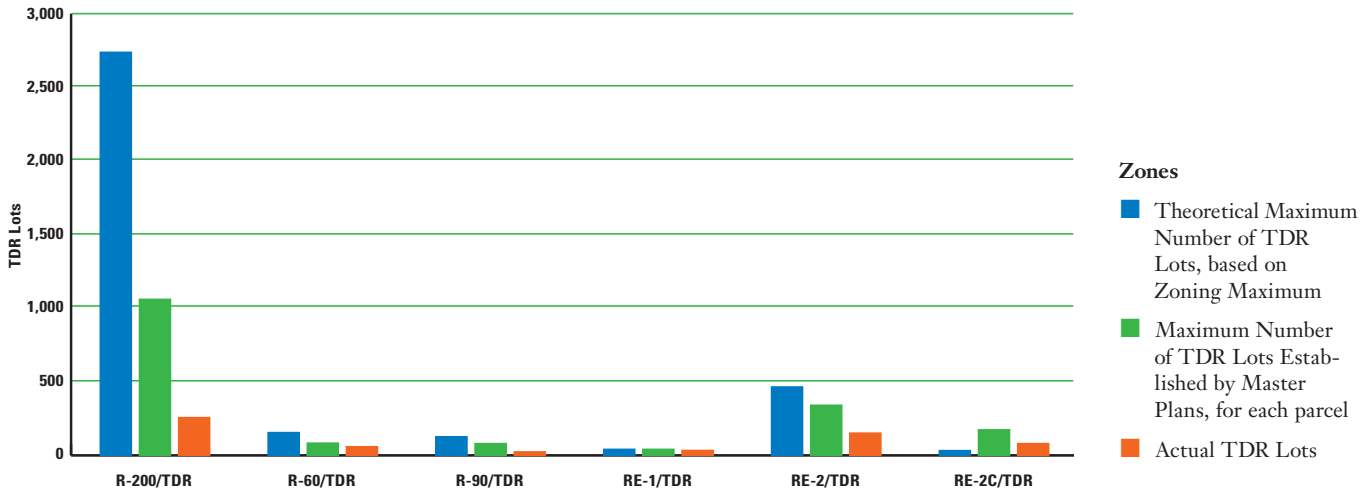


FIGURE 4.4

MAXIMUM TDRS ALLOWED IN ZONES DESIGNATED FOR TDR USE, BY ZONING DISTRICT



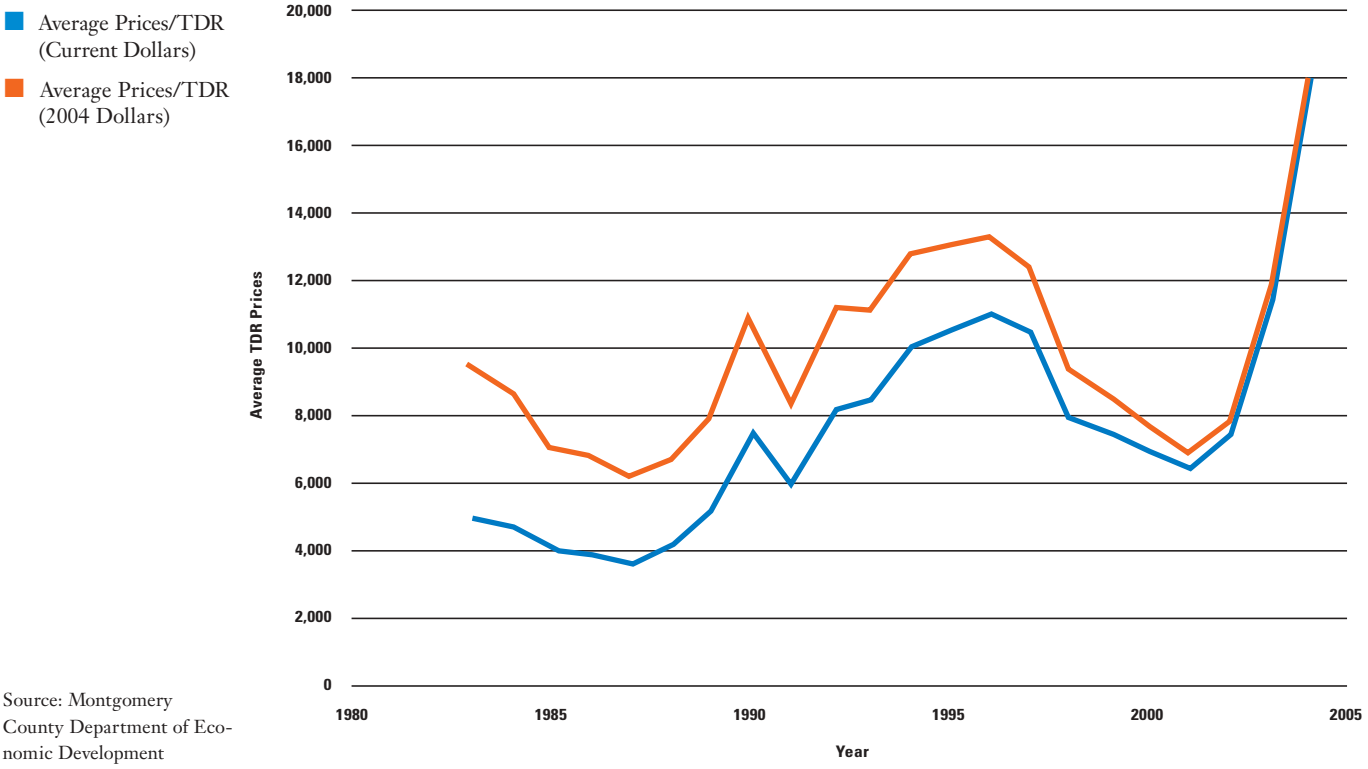
established a large potential increase, from 1 du/2 ac to 4 du/1 ac with TDRs, or an additional 3.5 units per acre (from Table 4.1), but the average number of additional lots permitted by the planning areas was 2.34 units per acre. Of the number permitted, developers used only about half in the actual subdivisions.

The use of TDRs in the RE-1 areas and the R-60 and R-90 areas tends to be close to the allowed number, but as Figure 4.4 shows, very few receiving areas were designated in those zoning types. And almost no areas were designated as TDR receiving areas in the higher-density zoning categories, such as R-20 and R-30. Several R-10 (10 du/1 ac) receiving areas were designated, but to date no subdivisions built in those regions have used TDRs. We have been told that it is difficult to build high-density residential units in urban areas. Because the local planners are trying to encourage this type of building, they are reluctant to burden developers with the added cost of TDRs.

The Montgomery County case makes it clear that the number of TDRs allowed is not necessarily the same as the number actually used by developers. In fact, it is difficult to establish any rule of thumb about the number of TDRs that could be used in a receiving area relative to the number of TDRs available from a sending area. Instead, the actual number purchased will depend on the baseline zoning, consumer preferences, market conditions for different housing types, and the willingness and ability of local residents to influence high-density development. Local

FIGURE 4.5

AVERAGE TDR PRICES, MONTGOMERY COUNTY, 1982–2004



Source: Montgomery County Department of Economic Development

authorities will need to have a sense of market demand, or be able to design a program that creates the appropriate demand for the market to be successful at maintaining prices and transferring the development rights.

As a result of the limited number of receiving areas designated, TDR demand was low during the 1990s and prices fell. With low prices, TDRs were also not being offered to the market, and therefore land was not being preserved at the rate the county had hoped.[33] Although many acres had been preserved, thousands more remained outside permanent preservation status.

Figure 4.5 shows average annual TDR prices in both nominal and real terms. Prices have fluctuated a good deal over time, much more than housing prices in the region. The decline in prices of the late 1990s is due primarily to the limited demand for TDRs, described just above. The recent surge in prices is due to a strong housing market and strong demand for TDRs to use in the new Clarksburg area— the last large town in the county planned for relatively high density. It is a "greenfield" site with few existing neighborhoods that has long been planned for high density with the use of TDRs.

Another problem for the smooth functioning of the TDR market in Montgomery County is that the use of TDRs, even in areas designated as receiving areas, must be negotiated with the county planning staff and in public hearings. Zoning regulations do not convey a "by-right" density; rather, each development must be negotiated for the number of units and the density through a lengthy development review process. This may deter developers from using TDRs.

Conclusions

The Montgomery County TDR program has been successful in many ways. With nearly 49,000 acres of farmland under easement, it far surpasses other TDR programs in terms of acreage preserved. It is also the most important farmland preservation program in the county, accounting for 75 percent of all preserved agricultural land. Because the program is fully private, the savings in public expenditures for the amount of land preserved is roughly $68 million—a significant sum. Montgomery County continues to have a relatively strong farm economy despite its proximity to a major metropolitan area. The number of farms in the county has even increased since about 1997, mostly in the small farm category.

Despite the upward trend in small farms, development pressure in the agricultural reserve area is still very strong, even with the 1980 downzoning. Some development is still taking place at the zoning of 1:25 acres. Moreover, most of the TDR transactions occurred in the 1980s, and the county has seen much less TDR activity since that time.

One of the main problems in the program is an insufficient number of receiving areas. Individual planning areas have a great deal of latitude in determining the number and location for TDRs. Most jurisdictions have been reluctant to absorb additional density. Our analysis of Montgomery County data showed that, in general, the TDR zones are designated in relatively low-density areas and allow only modest increases. We also found that developers often do not use TDRs in these designated zones at all, and, in those subdivisions where they are allowed, on average only about 50 percent of allowable TDRs are used. The county has a requirement that TDR subdivisions use at least two-thirds of the maximum allowable TDRs, but the 50-percent figure suggests that developers are often granted exemptions.

The exemptions are only one part of a more general problem that we see in Montgomery: TDR buyers cannot use them by right. Both the establishment of TDR receiving areas in planning areas and then the number of TDRs used by developers in each subdivision must be negotiated with planners and in public hearings. This takes time and resources and likely inhibits demand.

One issue that has become important in the Montgomery County program is the problem of the remaining development rights to develop 1 unit on 25 acres in the rural density transfer zones. Two separate markets have emerged, one for the TDRs that cannot be used for development in the rural density transfer zones, and one for the TDRs that can. The value of the latter, the super TDRs, has risen dramatically in recent years, and they now command a price many times higher than the other TDRs because of the high value of the land for development. This is a potential issue for many TDR programs, and Montgomery County is now exploring different ways to resolve it. Some argue that the low-density clustered development that can occur in the rural density transfer zones is still consistent with a rural landscape. Others would like to establish a separate market for these super TDRs and thereby remove those development rights from the region.

Ideally, prices for TDRs should rise over time, in keeping with the return on alternative assets, in order to keep potential buyers and sellers willing to participate. Prices in the Montgomery program have fluctuated a good deal, primarily because of the uneven availability of receiving areas and the unwillingness of developers to use TDRs. Prices have increased dramatically in recent years because the new community of Clarksburg has opened up for development, with many TDR sites designated. A related problem with prices is the lack of information on both prices and TDR supply. TDRs should trade at a relatively uniform price across transactions at any given point in time. But in Montgomery County, no record of individual transactions is being kept, and information about prices is difficult to come by.

CHAPTER 5

St. Mary's County, Maryland: The Problem of "Free" Density and TDRs

St. Mary's County, in southern Maryland, borders the subject of Chapter 3, Calvert County (see the map of Maryland, Figure 3.1.). It has had a TDR program on the books since 1990, but as we will describe below, the program has not been active until recently. The activity in the past few years can be attributed to some major program changes. Additional changes were being considered as of early 2007, and we describe the proposals below. The program targets farmland and open space preservation. In the next section, we provide some background information on agriculture, housing, and income in the county. We then discuss the TDR program design in the context of zoning and land uses in the county. The paucity of TDR sales is then documented and some additional information about development and land preservation in the county is presented.

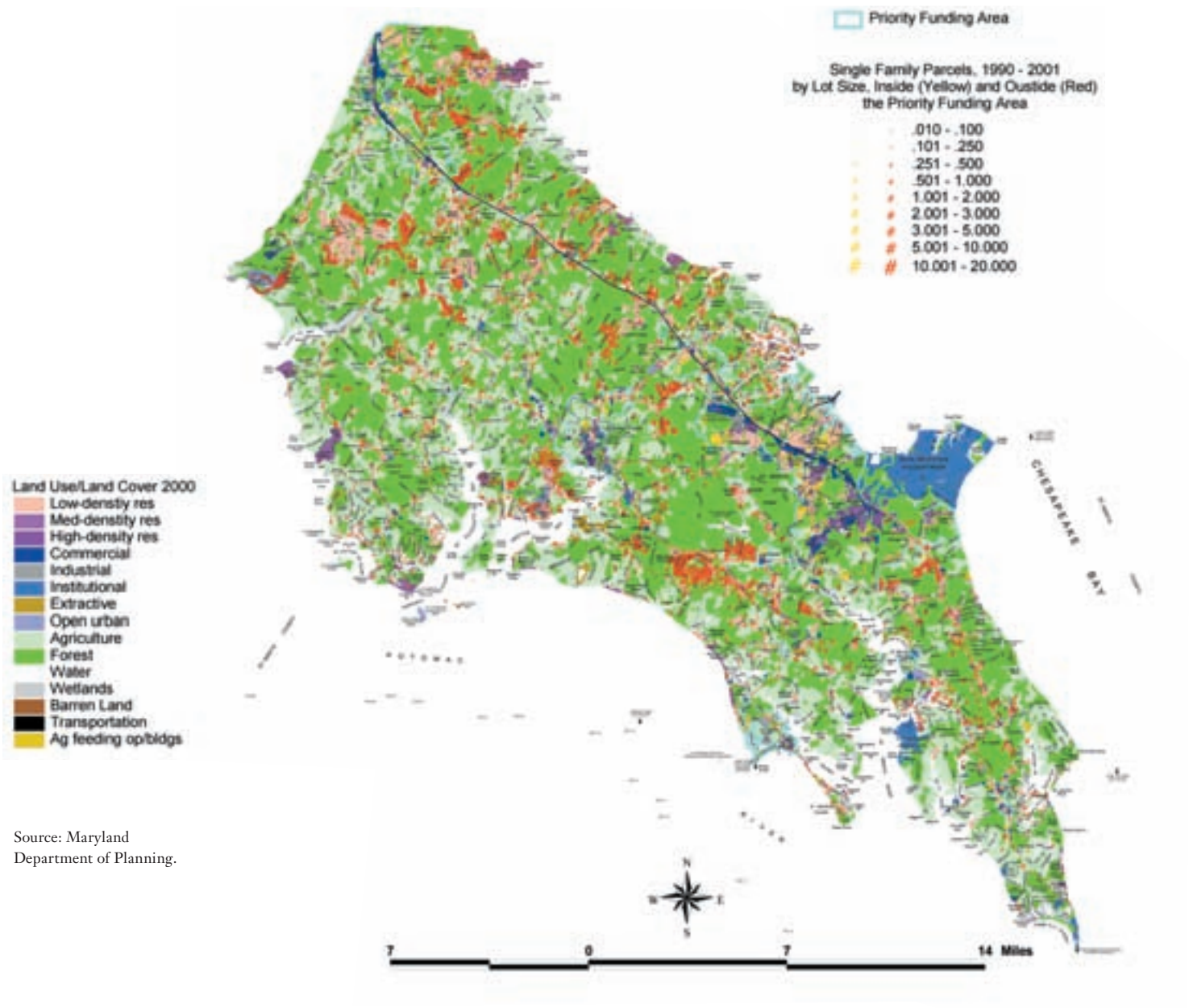
Background on St. Mary's County

St. Mary's has 231,000 acres of land area and is bordered by several bodies of water—the Chesapeake Bay to the east, the Wicomico River to the west, the Potomac River to the south, and the Patuxent River to the northeast. It has some 400 miles of shoreline; more than 18 percent of county land is within 1,000 feet of tidal waters, or within the critical area defined under Maryland's Chesapeake Bay Critical Area laws.[34] St. Mary's County ranks fourth among Maryland counties in critical area acreage.

St. Mary's had a population of 94,921 in 2004, giving it an average density of approximately 260 people per square mile. Population growth has been relatively high in recent years, with a 15 percent increase over the 1990–2004 period. The largest population center in the county is Lexington Park, which has a population of just over 11,000 and is an employment center because it is the home of the Patuxent River Naval Air Station. As in neighboring Calvert County, there is a great deal of relatively low-density subdivision development, though the county has more sewer service and thus more designated growth areas than does Calvert. As of October 2006, St. Mary's had 458 subdivisions covering just over 53,000 acres of land. The average lot size across all these subdivisions is 1.96 acres. Only 24 subdivisions—5.2 percent of the total—have average

FIGURE 5.1

LAND USE IN ST. MARY'S COUNTY IN 2000



Source: Maryland Department of Planning.

lot sizes less than or equal to one-quarter acre. The 70 subdivisions with average lot sizes of 5 acres or more cover 24,000 acres of land.[35]

Figure 5.1 shows the spatial patterns of land use in the county. The red areas on the map are single-family home developments located outside the state-designated "priority funding areas," and the yellow areas are developments inside these areas. The Maryland Priority Funding Areas Act, passed in 1997, allows the state to give priority to designated areas for purposes of funding infrastructure, such as roads, water, and sewer, and for economic development grants. All municipalities are priority funding areas, and counties can designate other areas that have existing infrastructure. Density limits in priority funding areas are significantly higher.

Counties neighboring St. Mary's—namely, Calvert and Charles—are major bedroom communities for the Washington, D.C., metropolitan area, but St. Mary's has fewer residents who commute to work there. In 2000, 27.3 percent of the St. Mary's workforce commuted to jobs outside the county, and only 7.6 percent commuted to jobs outside the state of Maryland, mostly in Washington (St. Mary's County 2003). In Calvert and Charles Counties, the percentages of people commuting to jobs beyond county lines were 43 percent and 42 percent, respectively. The Naval Air Station is a major employer in St. Mary's County and anchors what has been a relatively strong county economy in recent years. Nearly 73 percent of the jobs in the county are direct Naval Air Station jobs, and a significant percentage of additional jobs are related to the facility.

Median household income in St. Mary's was $59,700 in 2003, approximately equal to the U.S. average. House prices are slightly below those in neighboring Charles and Calvert counties and below the state average for Maryland as well. The median sales price of owner-occupied housing in fiscal 2005 was $250,000, compared with $282,000 in Charles County, $289,000 in Calvert, and $266,000 for the state as a whole.[36] Housing prices were relatively constant during the late 1990s but increased significantly in the early 2000s. Between 2001 and 2005, the median sales price, in inflation-adjusted dollars, increased an average of 14 percent per year.

Just over 68,000 acres—approximately 30 percent of county land—was in agriculture in 2002 in St. Mary's, a 35 percent decline from 1978 and a 12 percent decline from 1992. Both the number of farms and total farm acreage have dropped over time. There were 871 farms in the county in 1978 compared with 577 in 2002. Average farm size has remained relatively constant—120 acres in 1978 and 118 in 2002. Though relatively small compared with the state average of 170 acres, St. Mary's farms have remained about the same size for at least the past 25 years.

The value of land in farming has declined over time and has consistently been below the value for the state as a whole. In 2002, the average value per acre in St. Mary's was $2,831, 12 percent below the 1978 value (in constant dollar terms) and 19 percent below the 1982 value. The 2002 value was 31 percent lower than the corresponding value for Maryland as a whole.

One of the major factors affecting the value of agriculture in St. Mary's is the decline in tobacco, historically the most important crop in southern Maryland. As is the case in Calvert County, tobacco has declined sharply in importance since farmers took the tobacco buyout. As recently as 1997, approximately $9 million was earned from tobacco sales by St. Mary's farmers; by 2002, that figure had dropped to $1.7 million. Of all counties, St. Mary's lost the most acreage in the tobacco buyout—15,335 acres out of a total of 45,301.[37]

Despite the relatively low value of farming in St. Mary's, the county considers farming a vital part of its economy and is working hard to preserve the rural character of its communities. With 30 percent of the county land in agriculture, there is a base from which to work. Furthermore, the county is attempting to retain this land in agriculture through a variety of land preservation programs. As of 2005, 13,667 acres of farmland—20 percent of total farmland acreage and approximately 6 percent of the total county land area—had been permanently preserved from development through county land trusts, state programs, and private easements (Dehart and Etgen 2007).[38] Easements from the state agricultural program known as the Maryland Agricultural Land Preservation Fund account for about half of this acreage, or approximately 7,000 acres (St. Mary's County 2005). As we will explain more fully below, the county's

TDR program has not been active until recently, and thus almost no preserved acreage is attributed to the sale of TDRs.

Zoning Categories and Density Limits

St. Mary's County has one rural zoning classification, the rural preservation district, and several residential and mixed-use zones. The rural preservation district covers approximately 178,000 acres, 77 percent of the county's land area. It was established "to foster agricultural, forestry, mineral resource extraction, and aquaculture uses and protect the land base necessary to support these activities" (St. Mary's County 2005). The residential and mixed-use areas constitute the growth areas for the county—the areas where the county would like to see residential and commercial development concentrated. These growth areas—Lexington Park, the county seat of Leonardtown, five town centers, and seven village centers— are the designated priority funding areas in the county under Maryland's state Priority Funding Area program.

Table 5.1 shows the residential density limits set by zoning in the county, with and without the use of TDRs. In comparison with some other counties with TDR programs, St. Mary's rural

TABLE 5.1

DENSITY LIMITS AND BONUSES IN ST. MARY'S COUNTY[1]

	Density limit under baseline zoning	Increase in dwelling units per acre with TDRs[2]	Bonus units per acre for achieving maximun density with TDRs	Maximum density[3]
Residential				
Residential low density	1 du/ac	2	2	5 du/ac
Residential high density	10 du/ac	5	none	15 du/ac
Residential neighborhood conservation district	1 du/ac	1	none	2 du/ac
Mixed Use				
Residential mixed use	1 du/ac	2	2	5 du/ac
Village center mixed use	1 du/ac	2	2	5 du/ac
Town center mixed use	1 du/ac	5	2	5 du/ac
Downtown core mixed use	5 du/ac	2	none	10 du/ac
Corridor mixed use	1 du/ac	2	2	5 du/acre
Rural				
Rural preservation district	1 du/5 ac	0.13	none	1 du/3 ac

1. Rules based on 2002 Comprehensive Zoning Ordinance and Amendments through 2004.
2. 1 TDR is needed for each additional dwelling unit except in the rural preservation district, where 2 TDRs are required for each additional unit.
3. In some areas, additional density can also be attained with affordable housing units and particular design enhancements. See text.

zoning is not very restrictive. As indicated in the table, land in the rural preservation district in St. Mary's is subject to 1 du/5 ac zoning limits. By contrast, Montgomery County, has 1 du/25 ac baseline zoning in its Agricultural Preserve, Calvert County has 1 du/20 ac baseline zoning in its farm community districts and resource preservation districts, and Queen Anne's County has 1 du/20 ac zoning in its agricultural zones.[39] The 1:5 zoning in St. Mary's is more restrictive than it used to be, however: until a rezoning in 2002, the density limit in the rural preservation districts was 1 du/3 ac.

Like Calvert County, St. Mary's has an overlap in TDR sending and receiving areas—landowners in the rural preservation district have the option of selling development rights and preserving their land or purchasing development rights from other rural properties and developing their properties more intensively than baseline zoning allows. This was another change that took place with the 2002 rezoning. Previously, TDRs could be used only in the growth areas, but as compensation for the downzoning of the rural preservation district to 1 du/5 ac from 1 du/3 ac, the county decided to allow TDRs to be used in the rural zone to get back to the previous 1 du/3 ac limit. As can be seen in Table 5.1, the residential, town center, and village center areas allow a range of densities, from relatively low-density development of 1 du/ac up to very high densities of 15 du/ac with use of TDRs in the residential high-density zones. The TDR program is designed to encourage TDR use in the growth areas—the density bonus granted with TDRs is higher in these areas than in the rural preservation district, fewer TDRs are required to build an additional unit (only 1 TDR compared with 2 in the rural zone), and an additional bonus is granted in some areas for achieving maximum density with TDRs (see column 4 of the table). Nonetheless, as we will explain below, TDR use has been minimal in the county, and a great deal of development has taken place in the rural zone.

St. Mary's County's TDR Program

St. Mary's County's TDR program began in 1990, after the 1988 comprehensive plan recommended a downzoning from 1 du/ac to 1 du/20 ac; TDRs were suggested as a way to get landowners to accept such a drastic reduction in property values. The county commissioners would ultimately not accept the lower rural density, but they adopted the TDR program in the 1990 revisions to the county zoning ordinance.

Sending areas. The primary goal of the program is to preserve farmland, and there is no restriction on size, location, or type of farm. The rural preservation district is the only sending area, however, so only properties in this zone can sell TDRs. Each parcel of land in the zone gets 1 TDR for each undeveloped lot of record or 1 TDR per 3 acres of eligible land. Someone who owns an undeveloped 2-acre lot in the rural preservation district, for example, has a single TDR to sell; someone who owns 100 acres, all undeveloped, has 33 TDRs to sell (as long as all acres are eligible). Eligible acreage is determined by deducting from total acreage any sensitive areas that, for reasons of soils, topography, and so forth, are not considered developable.

The process by which development rights are transferred is as follows. A landowner first requests certification from the planning director, who then determines and certifies the number of TDRs available to sell based on eligible acreage. To "lift" TDRs from the property, the landowner then records an "original instrument of transfer" in the county land records. When this is done,

restrictions are placed on development of the property and the tax value of the property may be adjusted to reflect these restrictions. The TDRs are transferred to another party when an "intermediate instrument of transfer" is recorded in the land records; this instrument shows a serialized number for each TDR lifted and transferred. Finally, the TDRs are used to increase density on a receiving site only when a "final instrument or deed of transfer" is recorded. It is at this time that a permanent easement is placed on the sending property.[40]

When a landowner sells a TDR, he preserves only that single lot or only the acreage that could have been developed if the TDR were not sold—that is, 3 acres. So using the 100-acre farm as an example again, if only half of its 33 TDRs are sold, then only half of the farm, 50 acres, is preserved from development. This differs sharply from Calvert County's program, in which the entire acreage is under easement once the first TDR is sold, but is similar to many other programs. A crucial difference between St. Mary's and these other programs, however, is that the baseline density limit to which a property can be developed, 1 du/5 ac, is fairly generous. Using the 100-acre farm with 50 acres preserved as an example, in Montgomery County, Maryland, only 2 dwelling units would be permitted on the remaining acreage, while in St. Mary's, 10 dwelling units would be allowed because of the 1 du/5 ac density limits.[41] In addition, the TDR allocation rate of 1 TDR/3 ac in St. Mary's does not differ much from the density limit. This further dampens landowners' incentives to sell development rights in St. Mary's.

Although the primary goal of the TDR program in St. Mary's is farmland preservation, county planning officials would also like to use the TDR program to halt development of small parcels in the rural preservation district that are unsuitable for development. This is similar to programs in Malibu, California (Chapter 8), and Collier and Sarasota Counties in Florida (Chapter 9). In most cases, these are lots or parcels that cannot meet current standards for septic system installation or have steep slopes, highly erodible soils, stream buffers, wetlands and their buffers, or floodplains—factors that make the property undevelopable without a variance and without mitigation of the environmental impacts (Veith 2005). The county allows, and encourages, such property owners to sell TDRs and preserve their lands from development.

Receiving areas. As indicated in Table 5.1, TDRs may be used to increase density in the rural preservation district as well as in all residential and mixed-use areas. Since adoption of the comprehensive zoning ordinance in 2002, they may also be used to increase the floor area of commercial buildings in all areas where such buildings can be located. The St. Mary's program is one of the few that allows TDR use for commercial development. As noted above, 1 TDR is needed to build an additional dwelling unit in any of the residential or mixed-use areas, and 2 TDRs are needed to build an additional unit in the rural zone. For commercial buildings, which are subject to maximum floor area ratios established by the zoning code, 1 TDR provides 2,000 additional square feet of floor area. Base floor area ratios range from 0.05 in the rural zone to 0.40 in the corridor mixed-use zones and 0.60 in the downtown core mixed-use areas.[42] With TDRs, the limits range from 0.15 up to 0.60. For example, with TDRs, commercial buildings in the town center mixed-use zones can increase floor area ratios from 0.40 to 0.60. TDR use is "by right" in St. Mary's County; there are no compatibility-of-use requirements or county commissioners' hearings that are necessary before the density increase is allowed. If a developer has the required number of TDRs to build the additional dwelling units or added square footage, he will be allowed to do so.

TABLE 5.2

FEATURES OF ST. MARY'S COUNTY TDR PROGRAM

Year established	1990
Land area[1]	231,000 acres
General information	
Program goal is farmland preservation.	
TDR sale and use are "by right."	
One TDR is needed for each additional dwelling unit except in the rural preservation districts, where 2 TDRs are required for each additional unit.	
Prior to 1990 in rural areas and 2002 in growth areas, bonus density could be achieved without TDRs if developers used the planned unit development option; bonus density could also be attained prior to 2002 by connecting to county water and sewer.	
Bonus density remains available for some design enhancements, stormwater management activities, energy efficiency provisions, and affordable housing.	
Major program change is currently under review (see text below).	
Sending areas	
Rural preservation districts	
Land area	178,000 acres
Baseline density limit	1 du/5 ac
TDR allocation rate	1 TDR/5 ac
Receiving areas	
Rural preservation districts	
Land area	178,000 acres
Baseline density limits	1 du/5 ac
Density limit with TDRs	1 du/3 ac
Residential zones (low-density, high-density, and neighborhood conservation districts) and 5 mixed-use zones	
Land area	50,000 acres
Baseline density limits	1 du/ac–10 du/ac
Density limit with TDRs	2 du/ac–15 du/ac

1.This is the total county land area.

Table 5.2 provides a summary of the features of the St. Mary's County TDR program as of spring 2007. As we explained in Chapter 2, many other factors can affect the workings of the TDR program besides the program's design parameters and zoning density limits. Some of these factors in the St. Mary's case are highlighted in the table. One important point is whether the extra density allowed in receiving areas can be attained in other ways besides the use of TDRs. Many communities allow extra density when a developer clusters development on a portion of subdivision acreage, builds a certain number of affordable housing units, meets particular design standards, or complies with other criteria. In St. Mary's, developers used to be able to get

density bonuses from building a planned unit development (PUD)—basically, a rezoning of the particular properties planned for development to allow site-specific zoning standards that are different from those established in the zoning ordinance. PUDs were enabled in the county in 1967, and the densities for residential and mixed use PUDs in St. Mary's County have ranged from 0.615 du/ac to 5.0 du/ac. There are 19 PUDs in the county, with the majority of these—15 of the 19—located in the Lexington Park and Hollywood areas near the Naval Air Station. Rural PUDs have not been allowed since adoption of the z90–11 zoning ordinance in 1990. In 2002, all but two of the previously approved rural PUD rezonings were rescinded with the adoption of the 2002 comprehensive zoning ordinance, primarily because no development had proceeded to date (a situation generally due to a lack of sewer access and presence of soils that would not allow on-site septic system development). The 2002 ordinance required the use of TDRs in PUDs to get additional density.

Also prior to 2002, developers could get bonus density from connecting to county water and sewer. The density bonus was about 1 or 2 units per acre (depending on the zone). A development that used TDRs *and* connected to water and sewer could achieve 2 or 3 additional du/ac. In the high-density residential zone (10 du baseline and 15 du maximum—see Table 5.1) both water and sewer connection and the use of TDRs was required to exceed the baseline density.

The 2002 comprehensive zoning ordinance did not eliminate all non-TDR options for increasing density, however. If a developer adopts any design enhancements, such as energy efficiency practices, green building design, stormwater management systems, and pitched roof design, he can obtain a 0.25 du/ac increase over baseline zoning in the residential low-density areas as well as in all the mixed-use areas. Density increases are also allowed when a development includes affordable housing—an additional 1 unit per acre in residential low-density, residential high-density, and all mixed-use areas. Finally, in residential low-density and mixed-use areas, a provision encourages denser development by allowing an additional 2 du/ac to be built by right if overall density in the proposed development meets or exceeds 3.5 du/ac.

Program Results

According to Department of Land Use and Growth Management calculations made in spring 2005, only 9 TDRs were sold in St. Mary's County between 1990, when the program began, and 2002. The department estimated that between 2002, when the comprehensive zoning ordinance was passed, and April 2005, 146 additional TDRs were lifted and transferred to receiving properties. Thus a total of 465 acres had been preserved through the TDR program as of April 2005. An additional 445 TDRs were lifted after the 2002 rezoning and before April 2005, but as of that date, they had not yet been transferred to receiving properties. Based on projects in the works at that time, the department estimated that a further 2,703 acres of land would be preserved by the TDRs needed for those projects.[43] This would bring the total land area preserved to 3,168 acres.

Further information on land preserved through the TDR program is available in the county's Land Preservation, Parks, and Recreation Plan, published in December 2005. That document reported that TDRs had preserved 1,313 acres (St. Mary's County 2005). [44]

Director of the Department of Land Use and Growth Management, Denis Canavan, estimates that as of August 2006, approximately 1,000 acres of land had been preserved (Canavan

2006). The variability in these figures highlights the need for better recordkeeping in the county, particularly as the TDR program moves forward.

The county has a stated goal in its comprehensive plan of preserving 60,000 acres of agricultural land. Department of Land Use and Growth Management staff readily admit that the county is not on target to meet this ambitious goal (Canavan et al. 2005). Approximately 14,000 acres of farmland have been preserved through all programs, and a significant amount of additional open space has been protected by subdivision clustering in the rural preservation districts. It is a requirement in St. Mary's that subdivisions be clustered onto 50 percent of the parcel acreage. In fact, with buildout in the rural zone and no use of TDRs, it has been estimated that 53,500 acres of open space would be preserved (Canavan et al. 2005). With buildout at a density of 1 du/3 ac and use of TDRs, an estimated 84,700 acres would be preserved—62,400 acres from TDRs and 22,300 acres of open space.

Thus far, one commercial project in St. Mary's County has used TDRs. In December 2005, the Board of County Commissioners approved the use of 93 TDRs to build a 92,226-square-foot addition to a WalMart store (St. Mary's County Board of County Commissioners 2005). It was estimated that the TDRs used in the project preserved 255 acres of rural land.

Proposed Changes to the Program

In 2005, the county began studying the program with a view to make changes that would increase TDR activity and preserve more farmland. The local chamber of commerce developed a proposal, which the Department of Land Use and Growth Management further revised. In February 2006, the department presented a draft revision to the zoning ordinance for public review and comment. The proposal was discussed at the April meeting of the Planning Commission and is still under consideration. Canavan (2006) reports that, as of August 2006, review of the proposal had been postponed until early 2007.[45]

Under the new plan, sending areas would receive 1 TDR for every 5 acres of land; no deductions would be taken for acreage in environmentally sensitive areas, as in the current program.[46] Rural preservation district lands could still be either sending or receiving areas; however, all development that takes place in the rural zone, beyond the first dwelling unit on a property, would be required to use TDRs. "Rural legacy" areas would be limited to 1 du/5 ac, even with TDRs. Instead of requiring 2 TDRs for each additional dwelling unit beyond baseline density limits in the rural zone, the number of TDRs would vary with density; as density increases

TABLE 5.3

PROPOSED DENSITY LIMITS AND TDR REQUIREMENTS IN THE RURAL PRESERVATION DISTRICT

Density limit	TDRs required*
1 du/5 ac	1 per du
>1 du/5 ac and ≤ 1 du/4 ac	2 per du
>1 du/4 ac and ≤ 1 du/3 ac	3 per du

*One dwelling unit is allowed on a property without TDRs.

from 1 du/5 ac to a maximum of 1 du/3 ac, the number of TDRs needed increases according to the schedule in Table 5.3.

The greater the density, the more TDRs are required, with a cap on density at the current limit of 1 du/3 ac. Thus, with the current zoning and TDR program, a 100-acre property could accommodate 20 houses without TDRs or 33 houses with TDRs; to accomplish the latter, the builder would need to purchase 13 TDRs. Under the proposed program, that same property would be limited to one house without the use of TDRs; building up to 33 houses would still be possible but would require 96 TDRs—3 TDRs multiplied by 32 houses (plus the one house allowed without TDRs). The builder could build to a lower density and use fewer TDRs, but unless he is building only one house, some TDRs will be required.

The new law would also eliminate most density increases through means other than TDRs. Affordable housing would still provide a density bonus, but design enhancements in the current code, such as roof pitch and energy efficiency, would be dropped. Finally, the county is proposing a "fee in lieu" program: a developer would be able to pay a fee in lieu of purchasing TDRs in order to increase density in the rural preservation district to the maximum of 1 du/3 ac. The revenues would be used to support a county program for the purchase of development rights. The fee-in-lieu program has generated a bit of controversy, with some observers wondering whether developers will turn to that option rather than purchase TDRs (see St. Mary's County Planning Commission 2006).

The most controversial component of the revisions, and the most drastic change from the current program, is the requirement that any building in the rural zone beyond the first unit would require purchase of TDRs. The baseline density limit of 1 du/5 ac is effectively null and void in this situation. A landowner could build one house on his property, but beyond that initial dwelling, TDRs would need to be purchased.

The objective of the proposed changes is to spur the use of TDRs and thus preserve more acreage. Although the 2002 zoning changes jumpstarted the program to some extent, many TDRs thus far have come from small lots and relatively small farms (Canavan et al. 2005). The county wants to preserve significant blocks of farmland acreage.

Conclusions

The lack of sales activity in the first dozen years of the St. Mary's County TDR program—just 9 TDRs sold between 1990 and 2002—suggests that serious problems existed in the program's design. The most serious flaw was the granting of density increases through means other than TDRs: developers almost always turned to those cheaper and easier alternatives. The alternatives that were particularly appealing were planned unit developments and density bonuses for connections to water and sewer. Interestingly, the fact that development took place at densities higher than the baseline limits set by the zoning ordinance and in the growth areas outside the rural preservation district[47] indicates that there might have been some demand for TDRs had the other options for density increases not been available.

Between 2002, when the comprehensive zoning ordinance was passed and some of the "free" density was eliminated, and April 2005, an additional 146 TDRs were lifted and sold to developers, and another 445 TDRs were lifted but had not yet been used for development. Canavan (2006) estimates that, as of August 2006, approximately 1,000 acres of land have been protected through

the sale of TDRs. Although this is well below the acreage preserved through other programs employed in the county—the Maryland Agricultural Land Preservation Foundation, for example, has preserved approximately 7,000 acres, and Rural Legacy, the Maryland Environmental Trust, and other programs have preserved nearly 6,000 acres—the increase in recent years suggest some promise for the future of the TDR program in St. Mary's.

The proposed changes to the program are designed to further spur TDR sales and preserve more farmland, and also to shift development away from the rural preservation district and toward the designated growth areas. Like the Calvert County program, the St. Mary's TDR program allows TDRs to be used in rural areas to increase density. The changes under consideration would require TDR use for any building in the rural zone beyond the first dwelling unit on the parcel. This rather radical change from the status quo could lead to several outcomes. Since any building in the rural zone would require the use of TDRs, it seems likely that more TDRs will be used and more land preserved. It is possible that the requirement would make building in the rural zone prohibitively expensive, in which case TDRs would not be used, but we feel this is unlikely. Whether the changes spur development in the growth areas is an open question, however. Experiences in other in Maryland suggest that this may be an uphill battle. The proposed changes do not seem to provide enough incentives to generate that outcome.

St. Mary's may end up like Calvert County, where allowing TDR use in the rural areas jumpstarted the TDR program and led to a healthy supply and demand for development rights. An active TDR market is a sign that land is being preserved. It may be the case that eventually St. Mary's County, like Calvert, will be able to downzone both sending and receiving areas to encourage more use of TDRs in the more developed receiving areas, while reducing the density of development in the rural preservation district. However, if the Calvert experience is any indication of what is likely in St. Mary's, it may be that more familiarity with TDRs is necessary before this can take place.

St. Mary's County has set an ambitious goal of 60,000 acres of preserved land. With less than 14,000 acres currently preserved, it is falling well short of this goal. The TDR program has contributed very little to the effort to date, but the 2002 changes and the current proposed revisions, along with increased experience with the program by farmers and developers, are likely to lead to more program activity and more preserved farmland in the future.

CHAPTER 6

Charles County, Maryland: Problems with TDR Supply

Charles County, in southern Maryland, is adjacent to both Calvert and St. Mary's counties and has many miles of Potomac River shoreline. One of the largest counties in the state, it has a mix of urbanized, high-density areas in the north and remote rural areas in the far west. Charles County has established a goal of preserving about 64,000 acres in agriculture uses and would like to direct development more toward "development districts," primarily in the northern and eastern parts of the county. Its TDR program, enacted in 1992, was intended to contribute to these goals. But to date, the program has been able to protect only a small number of acres. We first provide background information on the county's agriculture and housing development patterns and trends. We then describe the TDR program design, including the types and locations of sending and receiving areas. Finally, the results from the program are presented, including evidence on TDR sales and where TDRs are used to increase density. Like several other chapters in the volume, this case study draws on data from development records and TDR sales to document the effects of the TDR program.

Background on Charles County

Charles County is in central Maryland, 30 miles south of the Washington, D.C., metropolitan area (see the map of Maryland, Figure 3.1). It has a land area of 294,000 acres, making it one of the largest counties in the state, and has a 2005 population of about 138,000. The county has experienced one of the fastest population growth rates in the state, about 60 percent over the past few decades. Like many regions, it has felt the pressures of rapid growth and the intense competition for land use that growth creates. The northern area of the county, near the city of Waldorf, is within relatively easy commuting distance of metropolitan Washington, D.C. The region to the south and west has large forested areas and is primarily undeveloped.

Housing prices in Charles County are relatively high. The median price of a single-family owner-occupied house in 2005 was $282,000, higher than the state average, but lower than prices in the state's urban counties that are part of the Washington and Baltimore metropolitan areas. As a result of the recent growth pressures, the price of housing in Charles County has been increasing rapidly, about 13 percent a year for the past five years.

Like many other counties in Maryland, Charles has seen a decline in both the number of farms and the amount of land in farming over the years. Land in farming has declined from more than 90,000 acres to about 50,000 acres since 1978. The decline has affected both cropland and acres in animal farming and pasture, although the amount of harvested cropland has remained relatively stable since the late 1980s.

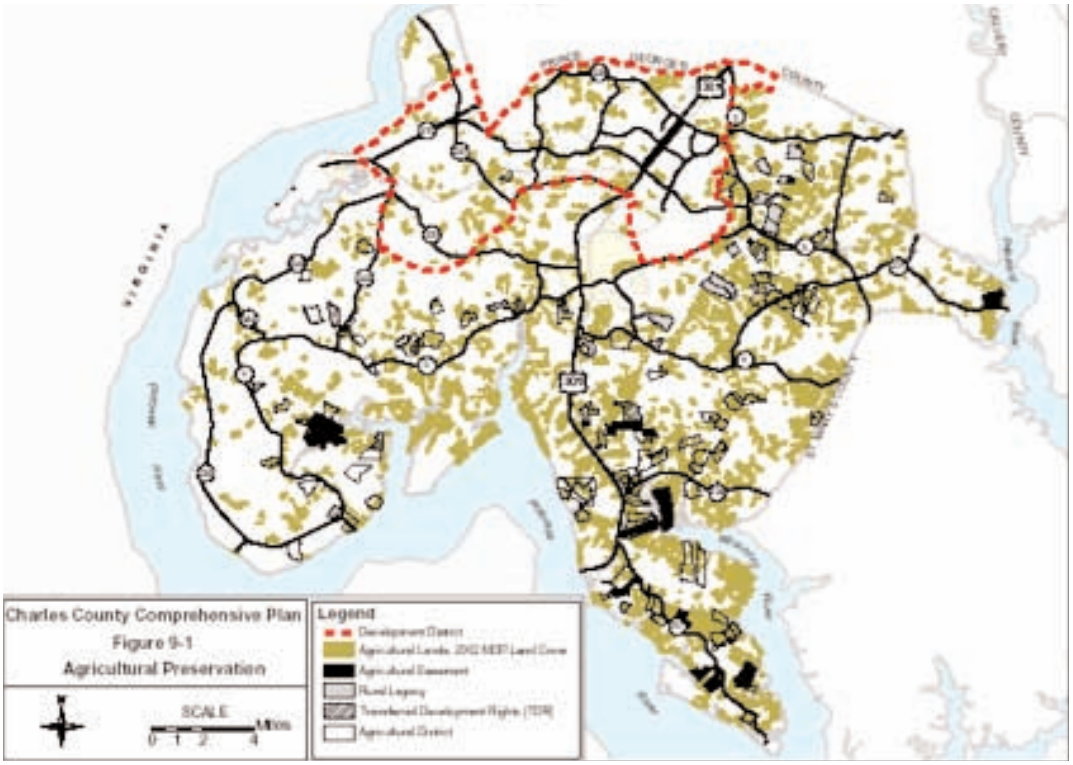
The agricultural sectors of the three southern counties, Calvert, St. Mary's and Charles, are similar in many ways. All were heavily dependent on the tobacco industry, and the local economies are being affected by the tobacco buyout, which began in 2000. No crops have fully taken the place of tobacco in Charles County, although there is some evidence that farmers are turning more to greenhouse and nursery products (Charles County Rural Commission 2003). However, traditional crops, such as corn and soybean production, have declined dramatically in recent years, and the long-term prospects for the agricultural sector in the county are still in question.

Evidence from Development Data

In this section, we summarize the amount, density, and location of development in the county, using data provided by the planning department on each approved subdivision, including the building of just a single housing unit. The data available cover subdivisions approved for development between 1992 and 2005. Subdivisions vary in size between 1 and 1,673 lots, and between 5 and 1,287 acres.[48]

FIGURE 6.1

MAP OF CHARLES COUNTY, MARYLAND: AGRICULTURAL LANDS AND THE DEVELOPMENT DISTRICT



Note: The green areas are agricultural uses, the black areas are preserved regions, and the area in red is the development district.

FIGURE 6.2

LOTS APPROVED IN CHARLES COUNTY SUBDIVISIONS, 1992–2005

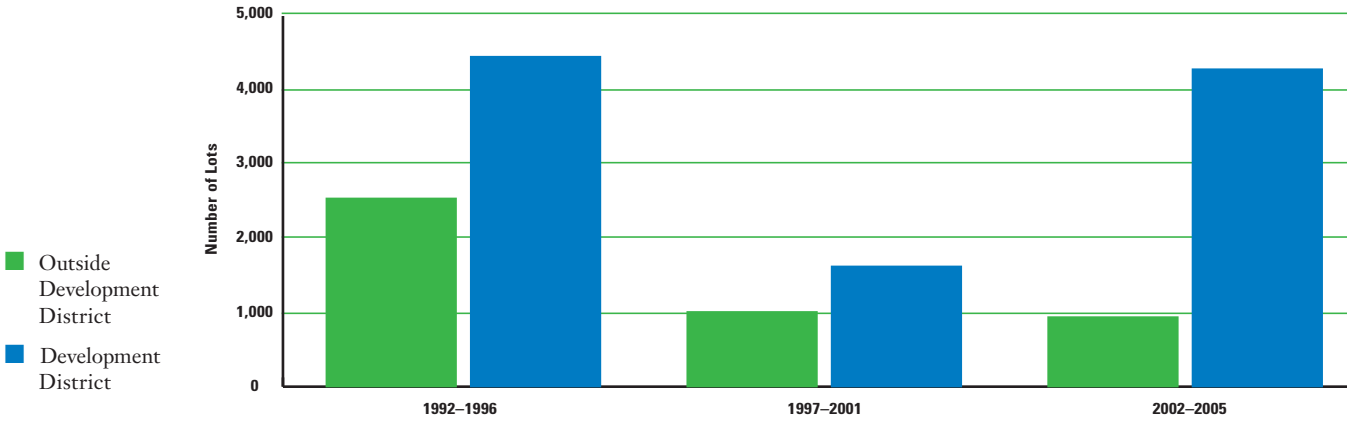


FIGURE 6.3

LOTS APPROVED BY ZONING CATEGORY AND TIME PERIOD IN CHARLES COUNTY

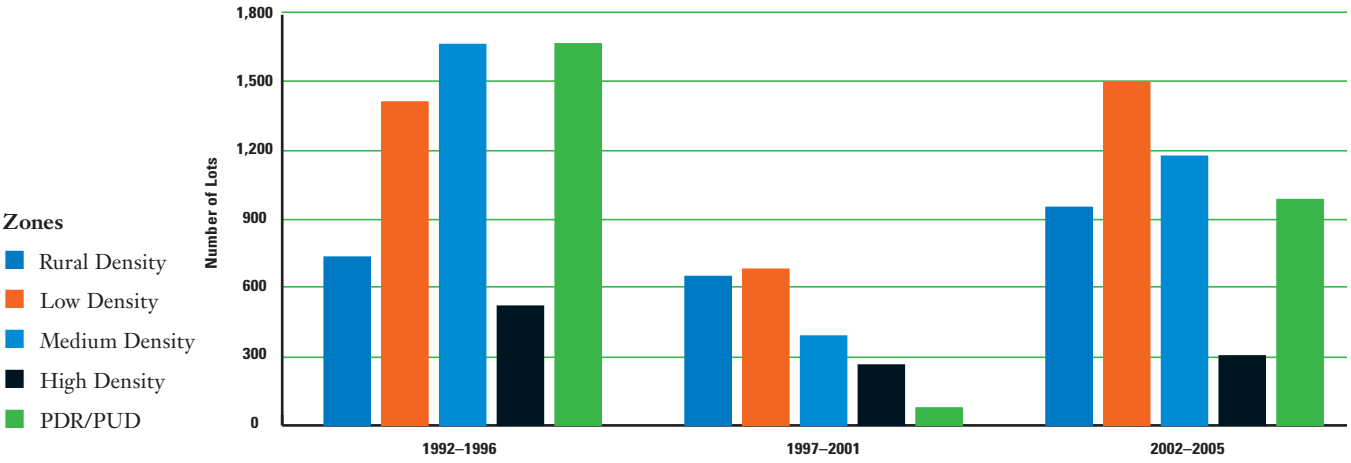
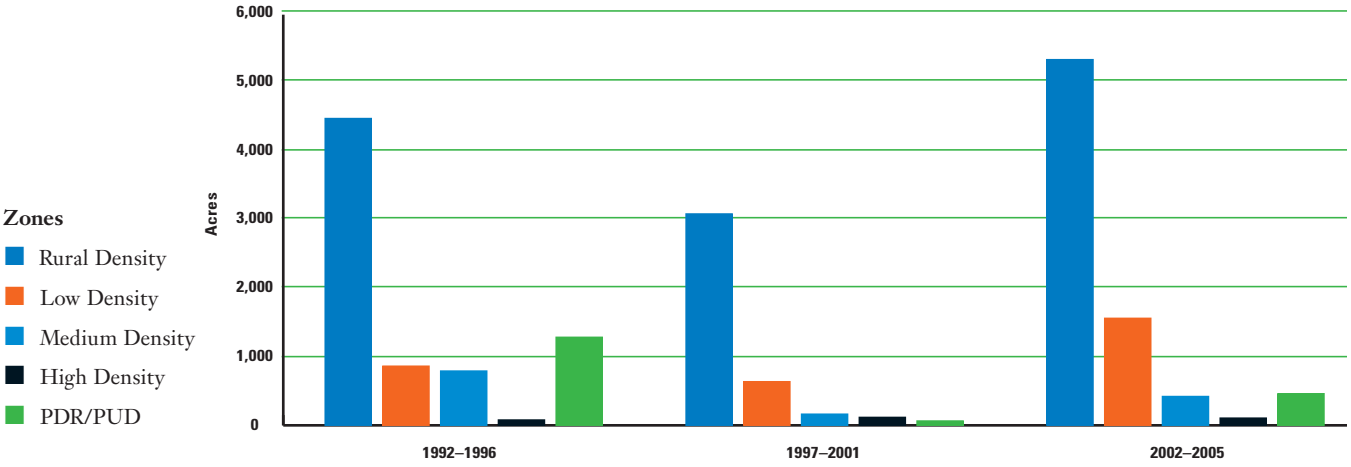


FIGURE 6.4

TOTAL ACREAGE OF CHARLES COUNTY SUBDIVISIONS APPROVED FOR DEVELOPMENT, BY ZONING CATEGORY AND TIME PERIOD



Some 12,000 lots were approved for development over the period of our data. The largest number was in 1994, when almost 3,000 units were approved, among them a very large planned unit development with about 1,600 units. Development was somewhat lower in the late 1990s, but in a recent surge in demand, more than 4,000 lots were approved between 2003 and 2005.

The goal of the county's development plan is to direct much of the growth toward what it has identified as the development district, which encompasses most of the major urban parts in the north, and some surrounding areas, which are zoned for residential use. The development district is inside the red dashed line in Figure 6.1.

How much of the development over the past 12 years has gone in the development district? Figure 6.2 shows that most of the lots approved have been in this district, and that the share going into these areas is occurring at an increasing rate.

We explore this issue in more detail by looking at the number of lots approved in different zoning areas in the rural area and within different zoning regions of the development district. Figure 6.3 shows the number of approved lots in the rural areas (agricultural conservation areas and rural conservation areas) and in four residential zones: low-density residential (1 du/ac), medium-density residential (3 du/ac), high-density residential (5 du/ac), and planned unit developments (mixed use with some residential of different density and commercial uses). The number of lots approved has been greatest in the low-density and medium-density categories; very few high-density units have been built.

However, the number and acreage of the subdivisions going into the different areas tell a different story. The number of subdivisions has been the highest in the rural and agricultural areas, where there are many very small (1- to 5-unit) developments. Figure 6.4 shows that the acreage being converted to development in the rural and agricultural areas is quite high. Although much of the housing is being built in the development district, a substantial number of small subdivisions are approved in the rural areas, with large lots and the associated land conversion. The Rural Commission in Charles County found that in 2000, about 37 percent of the county's housing stock was in rural areas (Charles County Rural Commission 2003).

Average lot size in the county has increased slightly over the study period. Average lot sizes were less than 1 acre before 1998 and have moved closer to 1.5 acres since that time.[49] However, substantial variation exists, depending on the type and timing of the large subdivisions.

Zoning and TDR Program Design

The Charles County TDR program was established in 1992 and began operation the next year. It was to be part of an effort to preserve a large amount of county lands in working rural uses. The 1997 comprehensive plan (Charles County 1997) states the goals for the rural areas: "The overall vision for community character in the Rural Areas is to preserve character in an economically sustainable manner. This means preserving agricultural, forested, marsh and waterfront landscape, protecting important views, scenic vistas and references to County history and culture, and maintaining and enhancing rural villages."

The county's specific goal for agricultural lands is to eventually preserve 64,000 acres, or about a fifth of the entire land area of the county.[50] The TDR program is the only county program to preserve land in agriculture—there is a state PDR program, but no county PDR program to date. Land to be preserved under TDRs can be either productive farmland or managed forest-

land. Although the TDR program started in 1993, there were no sales of TDRs until 1995, and no use of TDRs in the development district until 1999. The TDR program made agricultural and rural zones, the majority of the county, sending areas that could sell development rights to areas zoned for residential uses, the development district.

Sending areas. The county requires that the sending properties qualify under the Maryland Agricultural Land Preservation Foundation (MALPF) before they are eligible to sell TDRs. MALPF requires that a property must be enrolled as an agricultural preservation district, for which the requirements are relatively strict. Properties generally must be 50 acres or larger, have high-quality agricultural soils, and have no sand and gravel excavation.[51]

A property owner who is enrolled in MALPF can then apply to have TDRs certified by the county. Each qualifying parcel of land can certify 1 TDR for 3 acres of eligible land. This was based on zoning in the agricultural and rural conservation districts: a maximum of 1 dwelling unit on 3 acres. Once a single TDR is sold from the property, the entire property is restricted through a covenant to remain in agricultural use and is not eligible for development. A landowner may sell only some of the TDRs from the property at any one time and hold on to others for sale at a later date. As the TDRs are used to increase density elsewhere, they are conveyed to the Charles County commissioners and retired.

Charles County is one of the few places that has an escape clause for landowners who sell TDRs. A landowner can change his mind and at a later date buy back the TDRs on his own property, or on another property, as long as there is no net loss in preserved land. There has been only one such case to date.

The county had intense discussion about whether there should be any downzoning of regions, both when the TDR program was initiated and in later deliberations. The decision was made not to downzone when the TDR program was originally passed. But in 2000, a rural commission appointed to look at ways to make the TDR program more effective did recommend downzoning. At the time, there was consideration of reducing the allowable density in a large area of the far western part of the county to 1 house on 20 acres. This proposal proved too controversial and was defeated.

However, in 2004, one area of the county near the development district, just south of the town of Waldorf, was downzoned from the rural conservation zoning of 1 du/3 ac to 1 du/10 ac. This area is designated as a "deferred development" area and will eventually be opened up to higher-density development when the infrastructure is in place to accommodate it. The downzoning was intended to discourage development in that area and direct it more toward the rest of the development district. In fact, what appears to have happened is that the downzoning caused more of the new development to go into the rural areas. Many county officials are still hopeful that when the deferred development area is ready to be developed, TDRs will be the major way developers will be allowed to add density.

Receiving areas. TDRs can be used only in development districts, which are the residentially zoned areas. Table 6.1 shows the zoning rules, including the density allowed with TDRs. Each TDR allows the developer to build one additional unit. The zoning rules are the maximum number of housing units per acre.

One problem for the TDR market is that developers have other ways to get additional density above the baseline. For example, if affordable housing units are included in the subdivision plan, or if developers provide certain enhancements, additional density is often granted. Also, some areas are grandfathered to earlier and more dense baseline zoning. Realizing that allowing additional density without the use of TDRs means a lost opportunity to increase the amount of preserved land, the county commissioners changed the TDR ordinance in 1999 to require the use of TDRs any time higher density is allowed in an area or on a parcel.

TABLE 6.1

MAXIMUM ALLOWABLE DENSITY BY ZONING AREA, WITH AND WITHOUT TDRS

Base zones	Baseline density (du/ac)	Density with TDRs (du/ac)
Agricultural conservation		
Conventional	0.33	
Cluster	0.20	
Rural conservation		
Conventional	0.33	
Cluster	0.33	
Village residential		
Conventional	1.80	
Cluster	1.80	
With central water or sewer	3.00	
Low-density suburban residential		
Conventional	1.00	
Cluster	1.00	3.00
Transit-oriented development	1.75	3.50
Medium-density suburban residential		
Conventional	3.00	
Cluster	3.00	4.00
Planned development (residential or mixed use)	3.00	6.00–10.00
High-density residential		
Conventional	5.00	
Cluster	5.00	6.00
Planned development (residential or mixed use)	5.00	12.00–19.00
Planned manufactured home park	5.00	10.00
Transit-oriented development	15.00	27.50

The TDR market. The TDR market in Charles County consists of transactions between landowners in the sending areas and developers or others who wish to purchase TDRs. The county keeps a list of farmers and other landowners who have gone through the process of certifying TDRs and are the only ones eligible to sell. County officials also inform developers about using TDRs in receiving areas. The county is not involved in the negotiation or sale of TDRs but does keep a record of the transactions, the price of the traded TDRs, and information about the TDRs retired (that is, used in development). Those records are not public, however, so potential buyers and sellers have only anecdotal information about prices paid in previous transactions.

TDR Program Results

Although the goal of the TDR program in Charles County is to preserve 64,000 acres of agricultural land, more than 10 years after the program began, only 690 TDRs have been sold, and therefore just over 2,000 acres protected. Roughly 20 transactions between parties have taken place, and most prices have been between $3,800 and $4,500, but recently (2006) prices have been recorded as high as $20,000.[52] Despite an increase in sales in recent years, the market in TDRs is far from robust, and the program is not achieving the preservation goal.

Land Preserved

The county has relied for the most part on state programs to protect its farmland. Even these programs, such as MALPF and Rural Legacy, have protected only about 6,000 acres in total.[53] It is difficult to qualify for MALPF, and state funds even for the small number of properties that do qualify are limited. We should note that a good deal of nonagricultural land has been preserved in the county through other state programs and through state and local regulations for forest conservation and wetlands preservation. However, to date the MALPF program and the TDR program combined have protected only about 8,000 acres—far less than in the neighboring counties of Calvert and St. Mary's.

An important reason for the lack of TDR program activity is the requirement that a property must meet the eligibility for MALPF to qualify to sell TDRs. The MALPF program sets a high bar, and landowners who do qualify to participate in the program receive a higher value for their land. TDR prices are quite low, but MALPF pays a substantial percentage of the market value of the property, usually about 75 percent. In general, it has been difficult for developers to find farmers who want to certify and sell their development rights.

Part of the problem is that the price of TDRs has been low relative to the value of the land in the rural areas. Land values in the rural areas tend to be relatively high because the development potential on many parcels is good, with density limits of 1 du/3 ac. One study reports lot prices in some areas to be as high as $43,000 per acre (ACDS and ERM 2005). Although other evidence from the county suggests that land prices are lower, about $10,000 per acre, in rural areas with reasonable development potential (Rice 2005), these estimates are much higher than the current price of about $6,000–$9,000 for a TDR easement (3 acres of land) plus the value of the land in farming. The latter also varies a great deal across parcels, but for many farms it is quite low today.[54] In summary, because the TDR program is tied in so closely to the MALPF program and TDR prices have been so low, very few landowners can or want to offer their properties to the program.

That there are not sufficient properties that have certified TDRs is corroborated by other evidence: it has been reported that some developers have found it less expensive to buy land, certify it under the MALPF and TDR programs, and then sell the easements in the TDR market to themselves for development, rather than try to find certified TDRs (ACDS and ERM 2005).

Table 6.2 provides summary information about the Charles County TDR program.

TABLE 6.2

FEATURES OF CHARLES COUNTY'S TDR PROGRAM

Year established	1992
Land area	294,000 acres
General information	
Program goal is preservation of prime farmland and forestlands; ultimate goal is 64,000 acres preserved through all land preservation programs.	
TDR sale and use are "by right."	
Sale of 1 TDR puts permanent easement on entire sending parcel acreage; no development allowed.	
Sending areas have to qualify as state MALPF districts first, and then can elect to either sell easement under MALPF or certify county TDRs. Receiving areas only in development districts.	
Sending areas	
Rural conservation areas and agricultural conservation districts	
Land area	120,000 acres
Baseline density limit	1 du/3ac
TDR allocation rate	1 TDR/3 acres
Receiving areas	
Development districts	20,600 acres
Low-density residential	
Baseline density limit	1 du/ac
Density limit with TDRs	3–3.5 du/ac
Medium-density residential	
Baseline density limit	3 du/ac
Density limit with TDRs	4–10 du/ac
High-density residential	
Baseline density limit	5 du/acr
Density limit with TDRs	6–12 du/ac

The Demand for TDRs

Demand for TDRs has also been limited in the county, with few sales of TDRs to developers for increasing density in the development districts. The sales that have occurred have been almost exclusively in the low-density residential areas. They have increased the density somewhat over baseline zoning, but even in these areas, the full density bonus allowed with TDRs was not used. Table 6.3 shows the allowable density for each project under the baseline density rules, and the density allowed with TDRs for the project. It then shows the density the project actually used. Only two subdivisions used TDRs in the medium-density zoning areas, and none used TDRs in the high-density areas. This is another indication of the problem with the TDR market in Charles County. Even with low prices, developers appear to have little interest in using TDRs.

The density levels with TDRs are those chosen by developers. The use of TDRs at the level specified in Table 6.1 and shown in the fifth column of Table 6.3 is the "by-right" density according to county planners. Developers do not have to negotiate over this density when they use TDRs.[55]

Why is there so little demand for TDRs in Charles County? We find some of the same reasons as in other counties. First, developers can get higher density in other ways. In fact, many of the subdivisions achieved higher density than the baseline without using TDRs. For example, in the total sample of subdivisions, of those in the low-density residential category, 13 of 36, or about 36 percent, were built at higher density than the 1 du/ac allowed by baseline zoning. In some of the planned unit developments, density increases are allowed through a point system if developers add qualifying recreational land or recreational improvements— similar to St. Mary's County (Chapter 5). There is also some grandfathering to earlier density limits.[56]

TABLE 6.3

SUBDIVISIONS WITH TDRS IN APPROVED PLANS

Subdivision project using TDRs	TDRs used	Year of approval	Baseline residential density (du/ac)	Density allowed with TDRs (du/ac)	Density built with TDRs (du/ac)	Density bonus allowed with TDRs	Actual density bonus used
1	179	1999	Low: 1	3	1.75	200%	75%
2	8	2000	Medium: 3	4	3.68	33	23
3	152	2002	Low: 1	3	2.44	200	144
4	10	2003	Low: 1	3	0.13[1]	200	–(87)
5	32	2003	Low: 1	3	2.14	200	114
6	79	2004	Low: 1	3	2.43	200	143
7	82	2004	Low: 1	3	2.52	200	152
8	24	2004	Low: 1	3	1.49	200	49
9	124	2004	Medium: 3	6	4.17	100	39

1. A special case: this subdivision had large acreage, much of which could not be used for building.
Source: Spreadsheet from Charles County government, combined with information from agendas and minutes of Charles County Planning Commission meetings.

In addition, the current zoning rules without TDRs may provide density at levels sufficient for much of the market. Of those subdivisions that did not use TDRs and have not exceeded density limits for the reasons given above, none of the high-density developments are within 20 percent of the allowable limit on density, and about 62 percent of the low-density subdivisions are at less than 20 percent of the limit on density. This may be due either to market preferences for lower density than what is allowed or to residents' ability to block or reduce density in some areas. Whatever the reason, there will be no demand for TDRs if the existing density is at a level that is acceptable to most homebuyers and developers.

The TDR Market

In a well-functioning TDR market, there would be a single price for TDRs at any point in time, and, as we discuss in other chapters, prices would gradually rise over time, as do the values of other assets. If a single price does not prevail and potential buyers and sellers do not have good information about prices, players may be reluctant to participate and markets will be thin. Uncertainty about the right price today and in the future will deter buyers and sellers. Participants need information about past transactions and prices, and well-functioning markets often have a clearinghouse where the bids and offers of buyers and sellers establish a single trading price.

Neither the Charles County Planning department nor any other third party plays a clearinghouse function in this TDR market. The county does provide a list of farmers who might want to sell developments rights, but each transaction must be negotiated, and the prices often differ. Prices have tended to vary some with the location of the property, with lower prices paid if the property is more distant from the urbanized areas. There are so few trades currently that it is hard to envision any type of robust market. However, with the potential for more trades in the future, the county government could play a greater role in providing information and perhaps even establishing a clearinghouse for the transactions.

Conclusions

Relatively few TDR sales have taken place to date in Charles County. Only slightly more than 2,000 acres had been preserved under the program by the end of 2005. There appear to be problems in both the supply and the demand side of the market for TDRs. Few landowners can quality for the MALPF program and therefore for the TDR program. Those that do quality may prefer to sell under MALPF or not sell any development rights, instead keeping their options open for future development. Demand for TDRs in the development district has been relatively low, with the baseline zoning set at roughly what the market will bear. And until recently, developers that did want to build at higher than baseline density had other options besides TDRs.

The TDRs that have been purchased have been used almost exclusively in the low-density residential areas. Developers have increased the density somewhat over what it was under the baseline zoning but did not use the full density bonus. A requirement that developers use the full density bonus when they do use TDRs has been suggested (Charles County Rural Commission 2003), but it will not necessarily increase the demand for TDRs. It could, in fact, have the opposite effect if developers choose to use no TDRs at all. Instead, the program must be ad-

justed to give developers the economic incentive to purchase more TDRs in the areas targeted for development.

It is likely that some major change in land use policy may be necessary to increase the demand for TDRs, such as across-the-board downzoning and then expansion of the TDR sending and receiving areas. The Charles County Rural Commission (2003) recommends downzoning the development district and areas targeted for preservation, such as the far western region. It may not be a good policy to downzone only the development district (and allow developers to buy back), however: this would tend to make the cost of building at existing densities higher in the development district and might result in more building outside the development area. That is, in fact,what happened when one area adjacent to the development district was downzoned. Across-the-board reductions in density limits accompanied by some allowances for buying back the old density with TDRs is likely to be a more effective approach and will be perceived as more fair.

Another change would be to open up other areas for participation in the TDR program. The pool of sending areas could be increased by broadening of the program to include forestland, marshland, and other sensitive areas, and still maintain the intent of the program's preservation goals.

CHAPTER 7

Queen Anne's County, Maryland: Dual Programs with Divergent Outcomes

As the first county on the eastern side of the Chesapeake Bay (see the map of Maryland, Figure 3.1), Queen Anne's County is the gateway to Maryland's Eastern Shore, a historically rural area with valuable agricultural lands and many scenic waterfront areas. The county has had a TDR program and a density transfer program—very similar to TDRs—since 1987. The programs focus on farmland preservation, but in 1995, the TDR program was redesigned to also target preserving environmentally sensitive lands in the county's designated Chesapeake Bay critical areas. The changes in the programs over time have led to some very interesting outcomes. We begin with some background information on Queen Anne's County, and then turn to a description of the TDR and density transfer programs and their results.

Background on Queen Anne's County

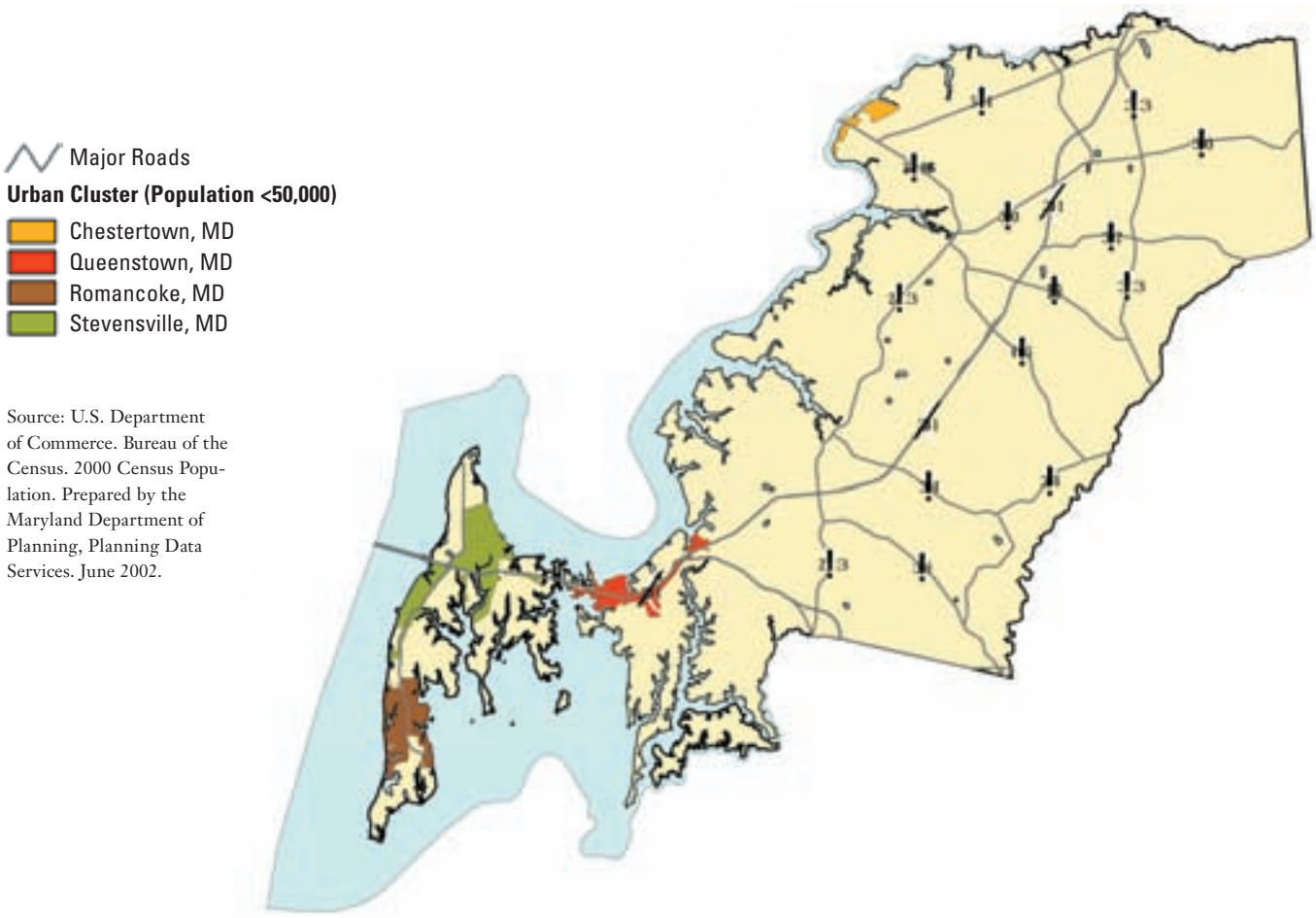
Although Queen Anne's County is not as close to urban centers as some of the other Maryland counties we include in our report, it has experienced significant growth pressures in recent years. More and more people are moving to the upper Eastern Shore and commuting across the Chesapeake Bay Bridge to Annapolis and other centers of employment. In addition, demand for waterfront properties and second homes in the region is intensifying.

Queen Anne's has eight incorporated towns and a significant amount of development on Kent Island, an unincorporated area just beyond the Chesapeake Bay Bridge. The population of the county in 2000 was 40,563, and growth has been strong in recent years. Most of the growth is occurring along Route 50/301, the main highway leading from the bridge between Kent Island and the town of Grasonville. The county has a land area of 238,300 acres and more than 450 miles of waterfront along the Chesapeake Bay, Eastern Bay, the Chester River, and other tributaries. Figure 7.1 delineates the county's urban clusters using U.S. Census data from the year 2000. It is clear from the map that population density is greatest in the developments on Kent Island near the Bay Bridge, even though this region of the county has no incorporated towns.

Estimated median household income for 2005 in Queen Anne's County was $71,750, seventh highest in the state. House prices have risen sharply in recent years; in fiscal year 2006, the

FIGURE 7.1

URBAN AREAS IN QUEEN ANNE'S COUNTY, MARYLAND, 2000



Source: U.S. Department of Commerce. Bureau of the Census. 2000 Census Population. Prepared by the Maryland Department of Planning, Planning Data Services. June 2002.

median price of a house in Queen Anne's County was $375,000, third highest in the state, behind only the highly urbanized counties of Montgomery (in suburban Washington) and Howard (near Baltimore). Between 2000 and 2006, the annual median house price in Queen Anne's more than doubled in real terms.

The relatively high incomes and house prices in Queen Anne's and the pressures from growth have not yet greatly diminished the role of agriculture in the county, which remains strongly agricultural and has maintained its rural character. In 2002, 155,566 acres of land in the county were in agriculture, or 65 percent of the total land area. In that same year, there were 443 farms, about the same number as in 1997. Average farm size in Queen Anne's is approximately 350 acres, more than twice the average for Maryland as a whole. Eighty-four percent of the farmland in Queen Anne's is cropland, with soybeans the most important crop in terms of acreage, followed by corn.

Farming in Queen Anne's has relatively high value. The market value of all products sold in 2002 exceeded $66 million. Though less than in some other Eastern Shore counties, this figure is far greater than Calvert, St. Mary's, and Charles counties (Chapters 4, 5, and 6, respectively). Most of the revenue—approximately 70 percent—comes from crop sales, with about 30 percent from poultry and livestock. Poultry farming is of very high value: 33 poultry farms in the county earned approximately $14 million in 2002.

Queen Anne's County uses several approaches to preserve farmland and open space. Approximately 55,680 acres of land is protected from development through state agricultural and environmental easements, or as deed-restricted open space in cluster subdivisions or TDR projects. Publicly owned parkland in the county accounts for an additional 7,366 acres of preserved undeveloped land.[57]

Queen Anne's County's TDR and Density Transfer Programs

Queen Anne's County has a two-part TDR program and a density transfer program called the Non-Contiguous Development (NCD) option. The main part of the TDR program focuses on agricultural land preservation and covers a large part of the county; in its current form, the program attempts to preserve farmland in the designated agricultural zones and channel development to growth areas—town centers and higher-density residential zones. The other part of the TDR program focuses on the Chesapeake Bay critical area. The NCD program is primarily a rural-to-rural density transfer program that preserves farmland and open space in the agricultural zoning districts. Density transfer programs shift density from one property to another and thus operate essentially like TDR programs; however, they usually require the sending and receiving properties to submit a joint transfer application. Each program has contributed some acreage to the total preserved land in Queen Anne's County. We discuss both programs, beginning with a brief history of planning in the county.

The first comprehensive plan in Queen Anne's County was adopted in 1965. At that time, 89.5 percent of the land in the county was classified as rural, with density limits of approximately 1 du/ac. A new comprehensive plan in 1987 focused on preserving large areas of the county for agricultural use and stated an objective of reducing density to approximately 1 du/8 ac. The zoning ordinance passed in that same year established 1 du/10 ac maximum density in the agricultural zone and 1 du/8 ac maximum density if the development was clustered onto 15 percent of the parcel. The 1987 ordinance also established the TDR and NCD programs. TDRs could be transferred from sending land in the agricultural or "countryside" zoning districts to receiving properties in the agricultural, countryside, or "suburban estate" zoning districts[58] — all zones that have low-density baseline zoning. To use TDRs to increase density, it was also a requirement that the development be clustered onto 50 percent of the parcel and that the density not exceed 0.9 du/ac.

These same rules applied to NCDs; however NCDs were allowed only in the agricultural and countryside districts; they were not permitted in the suburban estate zones. The NCD provision in the 1987 zoning ordinance states that "a landowner or group of landowners whose lots are in the same zoning district, but are not contiguous, may file a development plan under Article IX of this Ordinance in the same manner as the owner of a single lot." In other words, the NCD program requires that a joint submission for sending and receiving parcels be made and that the parcels lie in the same zoning district. This feature of density transfer programs distinguishes them from TDRs. The NCD language in the 1987 zoning ordinance has stayed the same in subsequent zoning ordinances, passed in 1994 and 2004.

The 1994 and 2004 ordinances included important changes to the TDR program. In 1994, receiving areas for TDRs were limited to the growth areas, and density bonuses in receiving areas were drastically reduced to only 25 percent. The new rules disallowed the use of TDRs in the

TABLE 7.1

FEATURES OF QUEEN ANNE'S COUNTY'S TDR AND NON-CONTIGUOUS DEVELOPMENT PROGRAMS (EXCLUDING CRITICAL AREA PROGRAM)[1]

Year established	1987
Land area[2]	238,300 acres
General information	
Program goal is farmland preservation; extension of TDR program in 1995 addresses preservation of land in the Chesapeake Bay Critical Area.	
TDR sale and use are "by right."	
Sending areas	
Agricultural and countryside zoning districts	
Land area	209,000 acres
Baseline density limit in agricultural district	1 du/20 ac
1 du/8 ac with clustering	
Baseline density limit in countryside district	1 du/5 ac[3]
TDR allocation rate in agricultural district	1 TDR/8 ac
TDR allocation rate in countryside district	1 TDR/5 ac
Receiving areas for TDR program	
All zoning districts in designated Growth Areas	
Land area	6,400 acres
Baseline density limits	3.2 du/ac–1 du/5 ac[3]
Density bonus with TDRs	25%
Receiving areas for NCD program	
Agricultural and countryside districts	
Land area	209,000 acres
Baseline density limit in agricultural district	1 du/20 ac
1 du/8 ac w/clustering	
Baseline density limit in countryside district	1 du/5 ac[3]
Density limit with TDRs	0.9 du/ac

1. A separate TDR program exists for the Chesapeake Bay Critical Area in Queen Anne's County; see text for details.
2. This is the total county land area.
3. Clustering requirements, ranging from 15% to 80%, exist in these zoning districts. Most of the growth area is in the higher-density zones.

agricultural districts. This zoning covers 209,000 acres, or approximately 88 percent of the county's land area, whereas the growth areas, which cover a range of residential zoning districts but are mostly the relatively high-density areas, amount to only 6,400 acres (Dehart and Etgen 2007). These acreage figures simply highlight the relatively small land area that became the TDR receiving area after 1994. The 1994 law also allowed TDRs to be used for commercial buildings, providing a 25 percent increase in floor area and impervious surfaces in growth areas with TDRs. There has been no commercial use of TDRs, however, and Dehart and Etgen (2007) quotes a developer as stating that the small density bonus, limited locations, and administrative costs of using TDRs make them not worthwhile for commercial projects. No significant changes were made to the NCD provisions in 1994.

The design features of the current TDR and NCD programs are outlined in Table 7.1.

The 2004 zoning ordinance created the Critical Area TDR program. The Critical Area regulations, developed by the state, act as an overlay to the county's zoning. Land in the Critical Area is generally subject to 1 du/20 ac limits, regardless of the local zoning district in which the land lies. The county's law allows for TDRs to be transferred from properties in the most sensitive part of the Critical Area—an area known as the resource conservation area—to other properties in any of the designated Critical Area zones. With TDRs, density on a developed property can go as high as 1 du/5 ac, provided that overall average density in the resource conservation area not go above 1 du/20 ac. Although the 2004 ordinance made some minor changes to the non-Critical Area TDR program—for example, TDRs used in particular election districts must

TABLE 7.2

ZONING, TDR, AND NON-CONTIGUOUS DEVELOPMENT REGULATIONS IN QUEEN ANNE'S COUNTY, MARYLAND (EXCLUDING CRITICAL AREA)

	Baseline density Limit	Density limit with TDRs	Density limit with NCDs
Agricultural	1 du/20 ac 1 du/8 ac with clustering	NA	0.9 du/ac with clustering
Countryside	1 du/5 ac[1]	1 du/4 ac[3]	0.9 du/ac
Estate	1 du/2 ac[1]	1 du/1.6 ac[3]	NA
Suburban estate	1.25 du/ac[2]	1.56 du/ac[2,3]	NA
Suburban residential	2 du/ac[1,2]	2.5 du/ac[2,3]	NA
Neighborhood conservation	Minimum lot sizes from 8,000 ft[2] to 5 acres[1]	Varies[3]	NA
Urban residential	3.2 du/ac[1,2]	4 du/ac[2,3]	NA

1. Clustering requirements ranging from 15% to 80% exist in these zoning districts.

2. These are density limits for single-family dwelling units; separate limits exist for multifamily units.

3. Receiving sites must be located in designated growth areas only. Density limits in table correspond to a 25% TDR density bonus.

NA=not applicable.

Notes: In the TDR program, 1 TDR is allocated for 8 acres of land in the agricultural sending areas, and 1 for 5 acres in the countryside sending area. One additional unit can be built with 1 TDR. In the NCD program, minimum 40 acres or half the acreage of the development parcel, whichever is less, must be preserved for each project. For information on the Critical Area TDR program, see text.

come from properties in those same districts—no significant major changes were made to either the TDR or the NCD programs.

Table 7.2 shows the density limits in the various zoning districts in Queen Anne's County, with and without TDRs or NCDs. The striking difference in the incentives in receiving areas between the TDR and NCD options shows up sharply in the table. With NCDs, density on a receiving property in the agricultural zone can increase from 1 du/20 ac (or 1 du/8 ac with clustering) to as high as 0.9 du/ac. In the TDR program, density in the suburban estates districts can increase only from 1 du/5 ac to 1 du/4 ac; similarly small increases with TDRs are allowed in the other districts.

Results of the Queen Anne's Programs

The Queen Anne's TDR and NCD programs have protected a significant amount of acreage compared with many other programs around the country. Table 7.3 shows the amount of deed-restricted acreage from all three programs, by time period. Slightly less than 10,000 acres has been permanently protected from development through TDRs and NCDs (including projects that were pending in 2005).

The 1994 changes to the TDR program caused some significant shifts in how land is being protected, however. Before 1994, TDRs accounted for most of the activity—2,180 acres compared with only 356 from the NCD. Since 1994, when TDR use was limited to designated growth areas, the NCD program has accounted for most of the preserved acreage while the TDR program has been relatively dormant, with the exception of Critical Area transactions. A total of 5,032 acres was protected by NCDs between 1995 and 2004, with another 1,595 acres pending approval as of August 2005.

The results clearly show that the demand for additional density in Queen Anne's County lies in the agricultural and countryside zones. One reason is the relatively low baseline densities in these zones and high bonuses with the NCD option. Another reason is the generous baseline density limits in the growth areas. In the urban residential district, all of which lies in the growth areas, baseline limits are 3.2 du/ac. However, county officials report that most development in this zoning district is going in at 2.5 du/ac or below; the baseline density limits are not binding. It is thus no surprise that there is virtually no demand for TDRs.

TABLE 7.3

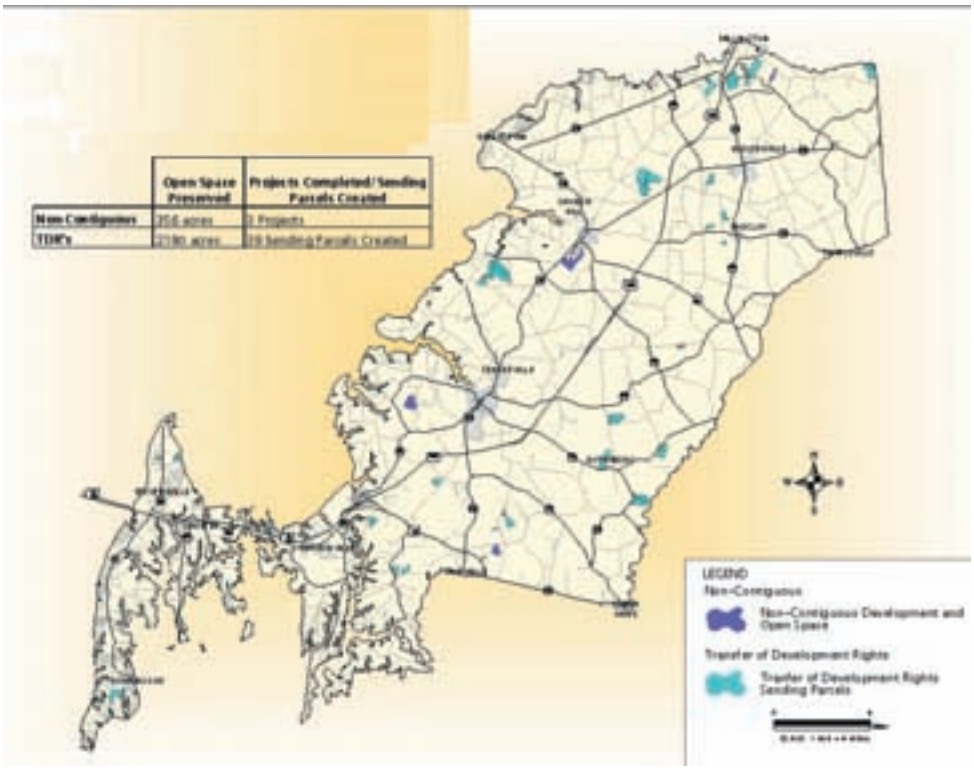
ACRES PROTECTED THROUGH TDRS AND NCDS IN QUEEN ANNE'S COUNTY

	TDRs	NCDs	Total
1987–1994	2,180	356	2,536
199?–2004	464	5,032	5,496
Pending		1,595	1,595
Total	2,644		9,627

Source: Rossing et al. (2005). Data are current through August 2005.

FIGURE 7.2

TDR SENDING PARCELS, NONCONTIGUOUS DEVELOPMENTS, AND OPEN SPACE CREATED IN QUEEN ANNE'S COUNTY, 1987–1994



Source: Rossing, Cohoon, and DelGaudio (2005). Queen Anne's Department of Planning and Zoning.

FIGURE 7.3

NONCONTIGUOUS DEVELOPMENT AND ASSOCIATED OPEN SPACE IN QUEEN ANNE'S COUNTY

Source: Rossing, Cohoon, and DelGaudio (2005). Queen Anne's Department of Planning and Zoning.

Figures 7.2 and 7.3 show the locations of properties in the TDR and NCD programs. Figure 7.2 shows both TDR and NCD properties that entered the program between 1987 and 1994. It is apparent from the map that the TDR program accounted for most of the activity in the county. Sending properties in the TDR program are dispersed throughout the county, though most are relatively far from the Bay Bridge. Figure 7.3 shows results of the NCD program, locating both sending and receiving properties—that is, both open space preserved from the density transfer and the new developments using the NCD option. Critics of the NCD program have argued that it is preserving land far from the Bay Bridge that would have remained undeveloped even without the program and is thus leading to more development in the county than there otherwise would be (Etgen 2006). Although this criticism is difficult to address without knowing the counterfactual, Figure 7.3 informs the issue by showing the location of developed and preserved parcels in the program. As with the TDR program, preserved properties appear to be dispersed throughout the county. Developments using NCDs, interestingly, are not located close to the Bay Bridge but are also somewhat geographically dispersed.

The current activity in the TDR program in Queen Anne's County is almost all Critical Area transfers. The price for these TDRs is quite high. Dehart and Etgen (2007) reports that although Critical Area TDRs traded for about $35,000 in the past, as supply has dwindled and the value of waterfront property has risen, they have sharply increased in value. Recent sales have been between $250,000 and $265,000 per TDR. By contrast, non-Critical Area TDRs are not being traded at all—they have essentially zero value with the current zoning provisions.

Conclusions

The Queen Anne's County programs seem to be succeeding at preserving farmland and open space, including land in the Critical Area of the Chesapeake Bay. County officials are relatively pleased with the outcome. On the other hand, some observers feel that the farmland being preserved, most of it in the northeastern region of the county, removed from the more developed areas near the Bay Bridge, would be staying in farmland in the foreseeable future in any case. These observers view the NCD program as leading to more development in the county than would otherwise take place. This potential problem with TDR programs is one that we mentioned above and has been emphasized in a conceptual economics framework by others (Levinson 1997).

One issue the county is facing, regardless of sentiments about the NCD outcome, is the lack of activity in the TDR program. With no demand for additional density in the growth areas, that program is currently moribund with the exception of the Critical Area TDRs. The county thus needs to reassess the goals and design of its TDR program.

CHAPTER 8

Malibu, California: State versus Local Control

The city of Malibu in Southern California, just north of Los Angeles, has had a TDR program since 2002. The program, which focuses on protecting the steep hillsides in the Santa Monica Mountains, was developed by the California Coastal Commission and initially resisted by the city. The city lost a court battle over the program and as a result has adopted it as part of its local coastal plan since 2004; such plans are a state requirement for coastal communities.

The city makes up about 20 percent of the land area of the Malibu coastal zone. A TDR program—often referred to as the Santa Monica Mountains TDR program—has been operating in this larger zone, which lies mostly in Los Angeles County, since 1981. We present a summary of this program because it encompassed the city of Malibu until the city was incorporated in 1991. In fact, before the city was incorporated, the city land area made up most of the receiving sites for development using TDRs, an outcome not always appreciated by city residents. Malibu's TDR program is also set up in the same way as the larger Santa Monica Mountains program and shares sending sites with that program; thus, understanding both programs is important.

Background on the City of Malibu

The city of Malibu is in the northwestern part of Los Angeles County. It has 27 miles of coastline along the Pacific Ocean, and in 2000, its population was 12,575. Malibu became an incorporated area in 1991.

The city is relatively wealthy, with many well-known actors and others in the film industry making their home there. It is a desirable location because of its proximity to Los Angeles, its beachfront location and mild climate, and the views from many properties in the coastal mountain range. In 2000, median household income was $102,031, 2.5 times the median for the United States as a whole. The median value of owner-occupied housing in Malibu in 2000 exceeded $1 million, 10 times the U.S. median.[59]

Although the mountains offer spectacular views and for that reason provide a desirable location for housing, there are many problems with building there. The steep slopes make access difficult in many locations and create problems providing infrastructure, such as water and sewer. In addition, the slopes are highly erodible, with landslides during winter months, and the dry climate leads to forest fires during the summer. The mountains are covered with thousands of

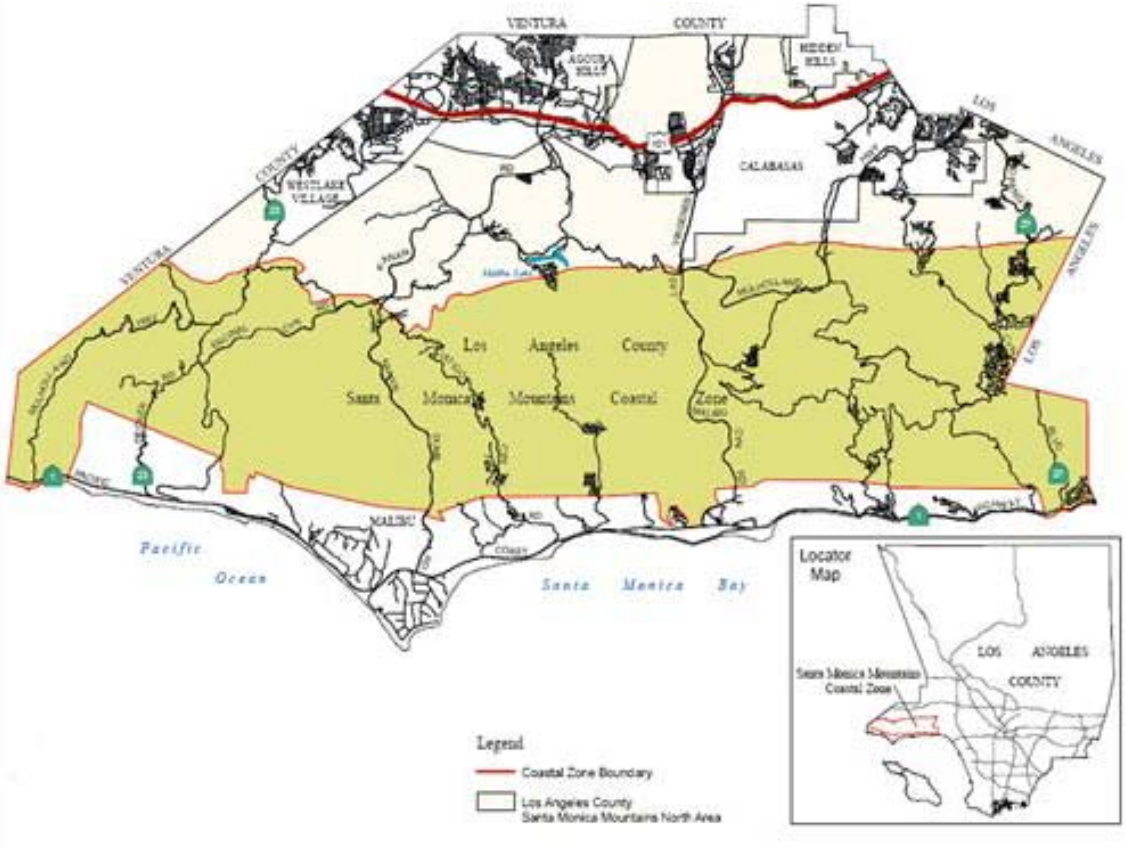
small lots that were created prior to the adoption of modern subdivision regulations, and though many are unsuitable for development, it is possible that they would be developed without some kind of regulations, particularly given the high value of land in the area. The primary purpose of Malibu's TDR program is to prevent development of these small, substandard lots. There is also interest in preserving the natural environment, which is unique among TDR programs. The mountains provide habitat for mountain lions and golden eagles and have an unusual degree of biodiversity. Recreational opportunities are also abundant.

Malibu's TDR Program

The state of California plays a major role in how the Malibu TDR program came to be and how it operates. Therefore, we begin with some background on the California Coastal Act and how land use is regulated in the Santa Monica Mountains area. We describe the Santa Monica Mountains TDR program, since it covered Malibu before the city was incorporated and forms the basis for the Malibu program.[60] We then describe the city's program. Figure 8.1 is a map of the Santa Monica Mountains area; the city of Malibu is the small white area bordering the Santa Monica Mountains and the Pacific Ocean.

FIGURE 8.1

MALIBU AND THE SANTA MONICA MOUNTAINS COASTAL ZONE



The Santa Monica Mountains/Malibu Coastal Zone Program

The California Coastal Act, passed in 1976, mandates that municipalities adopt local coastal plans (LCPs) to regulate development in coastal zones. The act also created the California Coastal Commission, which has primary responsibility for protecting coastal resources and for ensuring that public access to all coastal areas in the state. If a community does not adopt an LCP that meets with the commission's approval, the commission has the authority to approve or deny any applications for development in that community. Because no LCP was adopted in the Malibu coastal zone, the commission regulated development there from 1977 to 2004, when the city of Malibu finally adopted its LCP.

The commission used a TDR program—called a transferable development credit, or TDC, program—for the Malibu coastal zone in 1979 (well before Malibu incorporated). The impetus was the large number of existing, platted lots in the area that would eventually be developed unless some policies or regulations were adopted. In addition to harming the sensitive environment in the area, fire hazards, landslides, and the difficulty in providing infrastructure to these sites meant that they should not be developed. According to Hart (2006), these lots were impractical in both shape and size, with many being 30 to 50 feet wide and 100 feet deep. Approximately 28 of these small-lot subdivisions existed, with 100 to 500 lots in each.

The 1979 program required that an existing lot be retired for each lot created in a new subdivision. The program originally confined sending sites to existing substandard lots in small-lot subdivisions. But in 1981, the program was amended to include parcels within designated "significant ecological areas." One TDC was assigned for any combination of small lots that totaled 1 acre or for any combination less than 1 acre if they were determined to be buildable—that is, served by an existing road and not in a landslide area. Also, an owner could claim 1 TDC for existing lots of at least 4,000 square feet each. Once TDCs were severed from a sending site, a permanent conservation easement was placed on the property. It is at that point, that the development credit was allowed to be transferred to a receiving site.

Between 1980 and 1991, the TDC program in the Malibu coastal zone was relatively active. The Coastal Conservancy, a division of the California State Resources Agency, got the program up and running by purchasing 213 TDCs in the early 1980s, retiring lots in four substandard developments. The TDCs that were purchased were sold for development in acceptable receiving sites. The conservancy also began a fee-in-lieu program: developers were permitted to pay fees rather than purchase TDCs, and the conservancy would then use the funds to purchase TDCs itself. In addition, the conservancy initiated the Mountains Restoration Trust, a land trust that accepts donated easements in the area. The trust has been successful in getting donated TDCs from many landowners who receive tax benefits from their donations but can still enjoy the private, open-space benefits of their lots. According to Pruetz (2003), as of 2003, the trust had retired the development rights on 260 acres of land in one significant watershed area through the sale of 22 TDCs and had collected fees in lieu equivalent to 39 additional TDCs.

In total, between 1979 and 1991, this TDC program retired 924 substandard lots. However, it has been virtually dormant since 1991; according to Pruetz (2003), only 5 TDC sales occurred after 1991. This is the year that the city of Malibu, which had been the primary receiving site for TDCs, became an incorporated area. The city imposed a moratorium on new development shortly after incorporating. The original California Coastal Commission program still operates

TABLE 8.1

FEATURES OF MALIBU'S TRANSFERABLE DEVELOPMENT CREDIT PROGRAM

Year established	2002[1]
Land area[2]	64,640 acres (27 miles of coastline)
General information	
Purpose of the program is to retire substandard residential lots in the Santa Monica Mountains area and protect fragile environmental resources.	
After development rights are severed and an easement is placed on sending (donor) site, credits can be issued for use in new subdivisions.	
Sending areas (donor sites)	
Eligible category	**Credit allocation**
Lots in certain small-lot subdivisions in the Los Angeles County coastal zone[3] Lots that contain environmentally sensitive habitat area and are contiguous to each other or to other retired lots, with a minimum of three lots retired, in certain small-lot subdivisions in Los Angeles County[5]	One credit for any of the following:[4] ■ Retiring one or more small lots served by road and water mains and not located in a geologic hazard area, with a minimum sum total credit area of 1,500 sq ft; or ■ Retiring a total 1,500 sq ft credit area, calculated on the basis of 500 sq ft/lot credit area, provided that each lot exceeds 4,000 sq ft in area and is served by roads or water mains and not located in a geologic hazard area; or ■ Retiring any combination of one or more acres of small lots, regardless of the current availability of road and water service.
Other parcels identified in the Malibu LCP as consisting predominately of environmentally sensitive habitat	1 development credit per lot, up to 20 acres. For lots larger than 20 acres, 1 credit for each 20 acres; fractional TDCs allowed.
Parcels located within certain significant watersheds in the Santa Monica Mountains area[6]	
Parcels immediately adjacent to existing public parkland in the Santa Monica Mountains area where development cannot be sited to avoid encroachment of fire abatement requirements onto public parklands	
Parcels in wildlife corridors as designated in the Santa Monica Mountains area coastal zone.	
When relevant, Credit Area = (A/5) X (50-S)/35, where A = area of the lot in sq ft and S = average slope in percent based on natural conditions.	

Receiving area
All subdivisions are required to obtain 1 credit for each newly subdivided lot authorized
Small multifamily projects (less than 2,500 sq ft gross structural area) must obtain 1 credit for each 2,500 sq ft of gross structural area
Large multifamily projects (greater than 2,500 sq ft gross structural area) must obtain 1 credit for each new unit authorized, minus the number of existing parcels within a project site.

1 The local coastal plan was developed by the California Coastal Commission and adopted in 2002 but fought in court by the city of Malibu for two years.

2 This is the land area of the city of Malibu. Sending sites are located in the Santa Monica Mountains area, which is larger than the city (see Figure 8.1).

3 The subdivisions are Topanga Oaks, Malibu Vista, Malibu Bowl, Topanga Woods, Monte Nido, Vera Canyon, and Fernwood. See Local Implementation Plan, 7.7(A).

4 See Local Implementation Plan, 7.28.2(D). Monte Nido subdivisions have two additional options: one development credit is allocated for retiring any two parcels that are contiguous and have road access and water availability, or for retiring any five parcels that are not contiguous or do not have road access or water availability.

5 The subdivisions are Malibu Lake, Malibu Mar Vista, Las Flores Heights, and El Nido. See Local Implementation Plan, 7.7(B).

6 These significant watersheds are Arroyo Sequit, Solstice Canyon, Cold Creek Canyon, Tuna Canyon, Zuma Canyon, Malibu Canyon, Corral Canyon, and Trancas Canyon. See Local Implementation Plan, 7.7(D).

in Los Angeles County, but the county is in the process of adopting its own TDC ordinance as part of its land use plan (Harris 2006).

Malibu's TDC Program

For many years after it incorporated, the city of Malibu did not have a local coastal plan as required by the state Coastal Act. It originally wanted to have a TDC program in the plan with both sending and receiving sites within the city limits, but this approach was deemed at odds with the preferred state approach of treating the entire Malibu coastal zone as one area. Finally, at the direction of the state legislature, the California Coastal Commission prepared and adopted an LCP for Malibu in September 2002.[61]

The LCP developed for Malibu resembles the program that governed the wider Malibu coastal zone. Sending sites are referred to as "donor lots" and are predesignated by area and characteristics of location and natural resources. For example, one category is "existing lots within the following small lot subdivisions within Los Angeles County where the lots contain environmentally sensitive habitat area and are contiguous to each other or to other retired lots," followed by a list of neighborhoods.

The number of credits sent from a donor site depends on the resources of the site. For certain small-lot subdivisions, the calculation can be based on the following formula: Credit Area = (A/5)*(50-S)/35, where A is the area of the small lot in square feet, S is the average slope of the small lot in percent, and slope calculations are based on the natural (not graded) conditions. Thus, a lot with a steep slope will generate a smaller credit area. For example, in the Fernwood

subdivision, one development credit can be awarded for "retiring one or more small lots which are served by existing road and water mains and are not located in an area of landslide or other geologic hazard with a sum total credit area of at last 1,500 square feet."[62] It could also be awarded for retiring a total of 1,500 square feet in a credit area, calculated on the basis of 500 square feet per lot, provided that each lot exceeds 4,000 square feet and is served by roads or water mains and not located in a geologic hazard area; or for retiring any combination of one or more acres of small lots, regardless of the current availability of road and water service.[63]

A different TDC allocation rate applies to other parcels that consist predominately of environmentally sensitive habitat, are located within certain "significant watersheds" in the Santa Monica Mountains area, are adjacent to existing parkland where development cannot be sited to avoid encroachment of fire abatement requirements, or are in designated wildlife corridors in the Santa Monica Mountains coastal zone. These parcels are allocated one development credit per lot for lots smaller than 20 acres, and ONE credit for each 20 acres for parcels larger than 20 acres.

The development credits from these donor lots can be sent to any area within the city of Malibu where new lots can be created through subdivision within the residential zoning categories or multifamily projects in the "multifamily residential" and "multifamily beachfront residential" zones. The number of credits required depends on the type of development. For new subdivisions, the applicant must have one development credit for each newly subdivided lot. Large multifamily projects must have one credit for each new unit authorized, minus the number of existing parcels within the project site. Small multifamily projects must have a number of credits "proportionate to the size of the units at a rate of [one] development credit for each 2500 [square feet] of [gross structural area]."[64] Thus the program operates like the older Santa Monica Mountains program, in which any new subdivision requires TDCs from retired lots.

The Malibu planning director grants the right to use TDCs in a development once the applicant has purchased the credits from a donor site, recorded a permanent, irrevocable open space easement on that site dedicated to the city, and merged the retired lot with adjacent, unrestricted lots.[65]

The city of Malibu took the state to court to oppose the California Coastal Commission's LCP but ultimately lost the court battle. In 2004, it officially adopted its own LCP based on the commission's program.

Table 8.1 provides a summary of the Malibu TDC program.

Results of the Malibu Program

Since the city was given authority over the TDC program, there has been only one transaction, for a condition of approval for a subdivision in Malibu. As of August 2006, however, the developer had not yet obtained the credits needed to proceed. According to Hart (2006), as of summer 2006, the supply of credits was limited and asking prices were relatively high, approximately $50,000. Given the structure of the program, more than one credit is usually needed to build an additional unit, and thus TDCs add a significant amount to total development costs.

The Mountains Restoration Trust has been inactive in the TDC market in recent years as well. According to Harris (2006), the trust is preparing to talk to the California Coastal Commission about changing the criteria for TDCs, including the creation of a mitigation bank where development credits can be banked.

One of Malibu's foremost land use objectives laid out in its comprehensive plan is the desire to "preserve the city's rural residential character" (City of Malibu 1995). Indeed, the city does not have a great deal of high-density development. Much of the land in the city falls in the rural residential zoning district, which has average minimum lot sizes ranging from one acre up to 20 acres. Only a very small fraction of the land area is in the two single-family dwelling unit categories, which have quarter-acre and half-acre minimum lot sizes, and the two multifamily dwelling unit categories. In addition, the designated public open space—this is a zoning district in the city's code—is significant and includes some beachfront areas and some of the hillsides and watersheds closer to the mountains.

The community clearly has a vision for itself that includes only very limited development—and relatively low-density development at that—and preservation of open space, scenic areas, and environmental resources. As a result, it seems to see little role for a TDR program to meet its land use objectives. The strict density limits in the zoning code and the amount of public open space may be achieving the rural residential objective, and there seems to be little willingness to accept new development to preserve land in the nearby Santa Monica Mountains.

It is important to point out that when TDRs are used in Malibu, new developments are not denser than they would otherwise be. Thus, the challenge is persuading existing residents to accept not additional density, as it is in many programs, but rather, any new development at all. In Malibu, no new subdivision lots are allowed in the city without TDRs. So developers do not get a density bonus by purchasing TDRs; they simply are allowed to build a new subdivision. Apparently, with the prevailing climate in the city and the price of development credits, developers are unwilling to build new subdivisions in Malibu. In our opinion, it seems unlikely that the TDR program will take off to any significant degree in the near future.

Conclusions

The Malibu program provides a lesson learned in state versus local control over land use issues and the tensions that can arise from conflicting interests. The environmental goal of preserving the steep hillsides from inappropriate development and preserving significant ecological resources at the same time is a worthy one. However, even as the TDR program worked in the Malibu coastal zone during the 1980s, the city of Malibu was taking more development to preserve land in the mountains. This issue of the impacts of TDR policies on existing residents resonates in many programs around the country.

CHAPTER 9

Collier County, Florida: Downzoning and Bonus Densities

Collier County, Florida, has three TDR programs that apply to different areas—the highly urbanized, densely developed coastal area, the inland rural fringe, and the very rural northeastern lands. Two of the programs are quite recent, having been adopted in 2002 and 2003, and are intended to spearhead the county's land preservation efforts from this point forward. These programs govern the rural fringe and northeastern rural areas. The program that the county refers to as the Pre-Rural Fringe TDR program was established in 1974 and applies to the urban areas. We begin below with some background on the county's economy and land use patterns. We then give a brief discussion of the Pre-Rural Fringe program, followed by more extensive discussion of the newer TDR programs, with emphasis on the one that is the main focus of the county's TDR efforts. This is one of the "new generation" TDR programs that we mentioned in Chapter 1. Collier County addresses the potential problems with existing residents and extra density by putting its receiving areas on the fringe rather than the more urbanized centers. Both of Collier's newer programs are the result of a push by the state government to get the county to change its land use patterns. We highlight these issues below.

Background on Collier County

Collier County has the largest land area of any county in Florida, with 2,025 square miles, or nearly 1.3 million acres, of land. A map of counties in Florida is shown in Figure 9.1; we will refer to this map in our discussion of Sarasota County (Chapter 10). The county is bordered to the west by the Gulf of Mexico and extends south to Everglade City and west into the Everglades. It includes the city of Naples and the highly developed Marco Island resort community. The estimated permanent population of the county in 2005 was 307,242, with Naples, the largest city, having a population of 21,709. Because of the influx of people during the winter months, Collier's peak population is much greater than its permanent population; in 2000, the peak population was nearly double the permanent figure (Collier County 2006; http://www.city-data.com/city/Naples-Florida.html). Population growth has been high in recent years: over the 1994–2004 period, the county's population grew 62.5 percent (Southwest Florida Regional Plan-

ning Agency 2005). Over the five-year period between 2000 and 2005, the Naples–Marco Island metropolitan statistical area had the highest five-year population growth rate, 26.4 percent, of any MSA in Florida (Enterprise Florida 2006).

Collier is a wealthy county but a disparity in income exists between the unincorporated areas of the county and the Naples–Marco Island areas. In 2005, the county had the highest median household income of any county in Florida, $60,417. The county reports that in 2000, however, per capita personal income in the five election districts of the county ranged from $14,800 in a far inland district up to $44,220 in North Naples and Marco Island.[66] The percentage of the population living below the poverty line in Collier County in 2003 was 9.6 percent, compared with 13 percent for the state (US. Census Bureau 2006b).

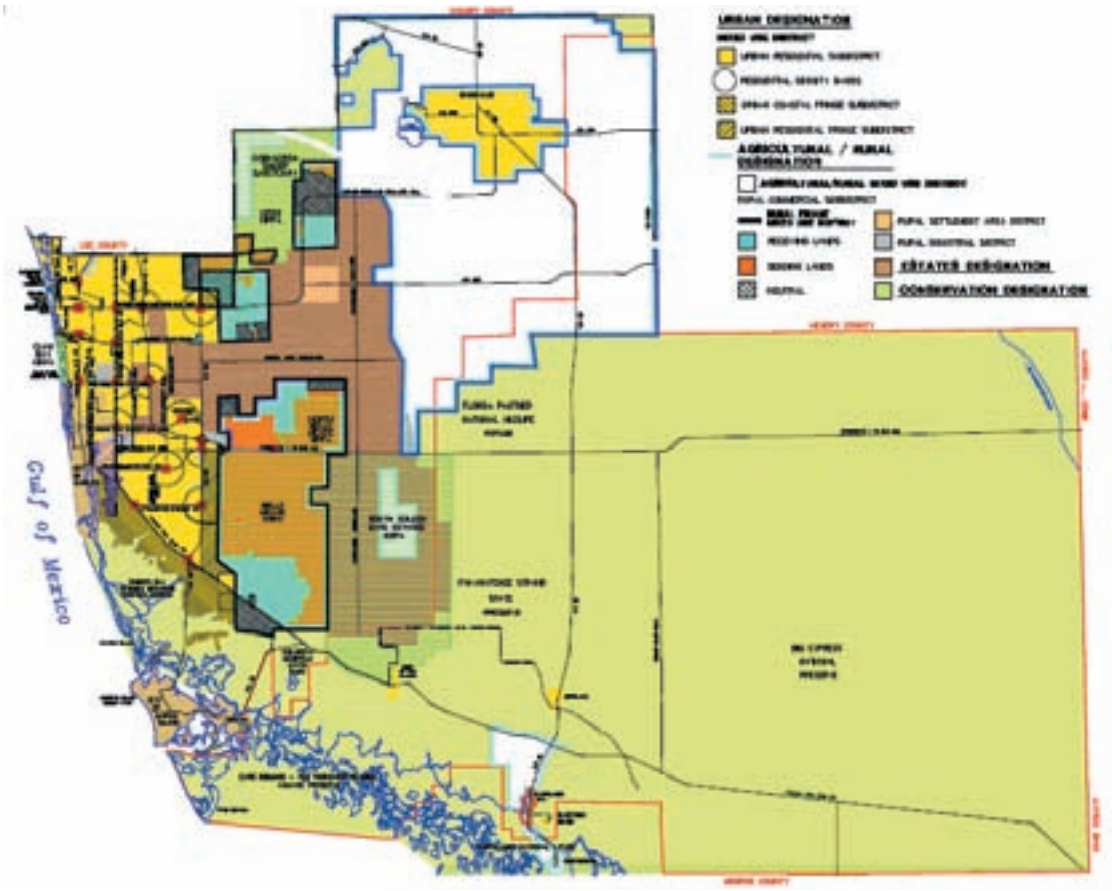
House prices are relatively high and have risen sharply in recent years. A study on housing affordability in southwestern Florida found that in Collier in 2002, the median sales price of single-family homes and condominiums was $250,000 and $171,000, respectively. Naples and Marco Island prices are substantially above the median for the county as a whole. In 2002, the median single-family home price was $635,000 in Naples and $425,000 on Marco Island (Southwest Florida Regional Planning Council 2005).

FIGURE 9.1

COUNTIES IN FLORIDA

FIGURE 9.2

LAND USE MAP FOR COLLIER COUNTY



In 2004, the county had a total of 174,564 dwelling units, and approximately 47 percent of these units were in multiunit structures (U.S. Census Bureau 2006b). Marco Island has very high-density development—1,402 dwelling units per square mile compared with the county average of 71 dwelling units per square mile. Most new development is taking place in the inland planning communities in the county, just adjacent to the coastal communities. In 2002, 61 percent of all new residential building permits were issued for the planning communities of South Naples, Golden Gate, and Urban Estates (3 of 12 planning communities in the county). By contrast, Marco Island and Central Naples accounted for only 3 percent (Collier County Comprehensive Planning Department 2003). Almost all subdivisions are built at planned unit developments (PUDs) in the county. As of April 2007, there were 336 PUDs in the county. Average residential density, at approximately 5.5 du/ac, is relatively high in these developments, particularly compared with some of the other counties described in this volume.[67]

Inland, Collier has a large area of land that is uninhabited or has very low-density development. The far eastern side, which runs into the Everglades, includes the Big Cypress National Preserve, the Florida Panther National Wildlife Refuge, and other publicly held lands. Federal and state government-protected lands in the county total approximately 964,000 acres, or 74

percent of total county land area.[68] The area on the rural-urban fringe is also relatively undeveloped, but because of growth pressure, this area is the target of the county's land preservation efforts. The northeastern rural lands, which include the town of Immokalee, are the agricultural hub of the county, and the county wants to preserve natural lands and agriculture in this region. A county land use map is shown in Figure 9.2.

Pre-Rural Fringe TDR Program

Collier County adopted its first TDR program in 1974, when it passed a new zoning ordinance that emphasized growth control and preservation of coastal islands and marshes. According to Pruetz (2003), more than 80 percent of the county land area was placed in a new zoning classification, the "special treatment" overlay. The overlay imposed environmental regulations and required special permits for new development. To encourage protection of environmentally sensitive lands in this zone, a TDR program was adopted. Originally, it allowed transfer of development rights only from the special treatment zone and only on contiguous properties; thus it applied to a limited set of parcels. In 1979, an amendment was passed that permitted transfers between noncontiguous parcels.

In the early 1990s, the TDR program was changed to a pure urban-to-urban transfer program. County planning officials report that this change was made in response to a transfer that took place in the early 1990s in which TDRs were purchased from a rural sending site for a very low price and used to increase density on the highly valuable and densely developed coastal area of Marco Island (Weeks at al. 2006).[69] To prevent this type of transfer from occurring in the future and preserve some open space and environmentally sensitive lands in the urban growth area, the program was changed to allow only urban-to-urban transfers.

The number of dwelling units that can be transferred from a sending property is based upon the maximum density established for that property in the zoning code. As an example, if a property is 50 acres and is zoned for a maximum density of 2 du/ac, then 100 units may be transferred from the property to another parcel of land.[70]

Some additional requirements in the program are quite stringent. Although any urban property can sell its development rights and be a sending property, it must then be dedicated fee-simple either to the county or a state or federal agency or, with the approval of the board of county commissioners, to a private, nonprofit environmental or conservation organization. This requirement presents a very high barrier for most property owners.

Most receiving sites in the Pre-Rural Fringe TDR program are allowed a bonus density of 10 percent of the maximum number of units permitted on that site by the baseline zoning. Thus, in residential single-family zone 1, which has a baseline zoning of 1 du/ac, the density can be increased to 1.1 du/ac; in residential single-family zone 2, which has a baseline zoning of 2 du/ac, the density can be increased to 1.2 du/ac. Some receiving sites—planned unit developments and areas zoned to a relatively high baseline density—are permitted only 5 percent additional density with TDRs. The density bonuses have been lowered slightly over time; Pruetz (2003) reports that they were originally in the 10 to 20 percent range.

All TDR sales under the Pre-Rural Fringe program must be approved by a supermajority vote of the board of county commissioners. Thus, TDR use is not "by right"; rather, each sale is subject to county government approval. This is another major hurdle that property owners must

overcome to participate in the program, and it adds a degree of uncertainty to the development rights transfer process.

Pruetz (2003) reports that 526 development rights have been transferred via this program, resulting in 325 acres of land preserved. A single transaction accounted for 350 of the transferred rights. Officials from the county planning department report no TDR sales in the program since the early 1990s (Weeks et al. 2006).

New TDR Programs[71]

A second TDR program in Collier County was established by the Rural Fringe Growth Management Plan Amendments, adopted in June 2002, and a third, known as the Rural Lands Study Area, covers the eastern portion of the county and was adopted in October 2002. The programs differ because they were designed by separate consultants and because the areas they address differ in current land uses, number of property owners, and parcel sizes. We begin with background on the two programs and then describe their details.

Recent Land Use Planning in Collier County

Collier County adopted its growth management plan (comprehensive plan) in 1989. Although the plan contained a strong environmental component, including habitat conservation plans for particular species, the county did not follow through with specific plans to meet its goals. In 1996, the county conducted an evaluation and appraisal of its growth management plan, as required by Florida state law. This study evaluated progress toward the goals set out in the original plan and its consistency with the vision of the county. As a result of this evaluation, the county adopted amendments to the growth management plan in 1997. However, the state Department of Community Affairs found the amendments to be out of compliance with state laws. Some environmental organizations, including the Audubon Society, agreed and sided with the state in an administrative law hearing. Eventually, in June 1999, the state imposed a partial moratorium on building in rural areas of Collier County and froze residential density at 1 dwelling unit per parcel, regardless of parcel size. The state directed the county to repeal its 1997 amendments, assess the rural and rural fringe areas, and come up with new amendments that would focus on three goals: (1) curtailing urban sprawl, (2) protecting prime agricultural lands, and (3) protecting natural resources, including groundwater and wildlife habitat.

In response to the mandate, the county created two study areas, the rural fringe area and the eastern rural lands area. Studies of land use in the two areas were conducted over a three-year period and involved public consultation and citizen input, along with consultants' reports. In June 2002, the Rural Fringe Growth Management Plan Amendments were adopted. Some legal challenges by property owners prevented these amendments from becoming fully effective until July 2003. The amendments included adoption of a "rural fringe mixed use" zoning overlay with a TDR program a critical component. The Rural Lands Study Amendments, which applied to the eastern area, were adopted in October 2002.

Rural Fringe Mixed-Use Zone and TDRs

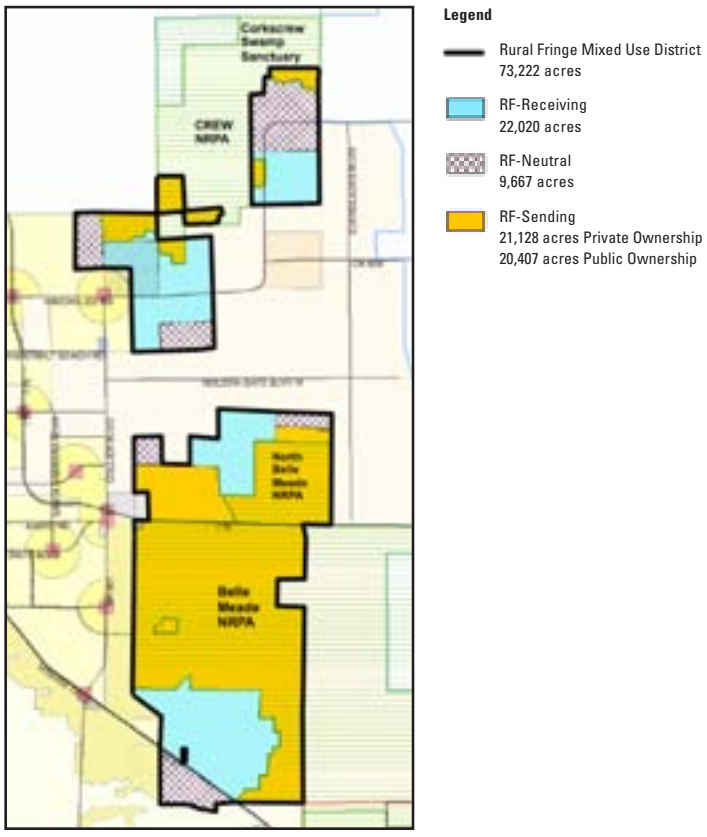
At the time that the studies began, the county estimated that the rural fringe area totaled 93,600 acres, or 7 percent of Collier County's total land area and 28 percent of its privately held land area (that is, total acreage less the large amount of land held by state, federal, and local government agencies; see Figure 9.2). Land cover data from 1994–1995 aerial photography indicated that 4 percent of the rural fringe area had been urbanized. Agricultural lands covered 14 percent, and natural lands almost 75 percent. These natural lands included wetlands (59 percent of the area) and forests (slightly more than 14 percent (Collier County Planning Department n.d.).

Although the rural fringe mixed-use district is a relatively small percentage of the county's total land area, it was deemed the area most susceptible to growth pressure and most worthy, from a wildlife habitat and natural resource conservation perspective, of protection. Figure 9.3 is a detailed map of the rural fringe. The Golden Gate Estates area surrounding the zone was not part of the new program because it was already designed for development and had water and sewer service. The county determined that although the lands were not fully developed, it would be too difficult and costly to convert them back to natural uses.[72] Land farther inland, including the Big Cypress National Preserve, was already protected from development.

When the Rural Fringe Growth Management Plan Amendments were adopted in 2002 and the rural fringe mixed-use zone was mapped, lands in the zone were designated as sending lands, receiving lands, or neutral lands, and the specifications of the new Rural Fringe TDR program were laid out. Development rights may be lifted from the sending lands but can be used only in the zone's receiving areas, not other areas of the county; the one exception is that properties in the urban residential fringe subdistrict, an area that lies between the rural fringe and the more urbanized areas to the west, may use TDRs. Table 9.1 lists basic information about the Rural Fringe TDR program. Sending area acreage is nearly twice the acreage of receiving areas, and approximately 10,000 acres of land is neutral.

FIGURE 9.3

RURAL FRINGE MIXED-USE DISTRICT IN COLLIER COUNTY



Sending lands. Sending lands in the rural fringe mixed-use zone have a baseline density of 1 du/40 ac or 1 du/parcel for parcels less than 40 acres. TDRs can be sold from these sending lands at the rate of 1 TDR/5 ac; this is the TDR allocation rate. In other words, the owner of a 40-acre property has the option of building a single dwelling unit or selling up to 8 development rights; under the latter option, she would preserve her property from development in perpetuity. In addition, she can sell up to 7 development rights, and as long as she retains 1 right, she can build a single dwelling unit on the property. This allocation rate and base zoning density together imply a TDR transfer ratio of 5:1.

TABLE 9.1

FEATURES OF COLLIER COUNTY'S RURAL FRINGE TDR PROGRAM

Year established	2002[1]
Land area[2]	73,222 acres
General information	
Program goal is preserving wildlife habitat and environmentally sensitive lands and curbing residential sprawl on the county's urban-rural fringe.	
TDR sale and use are "by right."	
Retention of 1 TDR allows development of sending parcel at baseline density limit (1 du/40 ac).	
"Neutral" lands in rural fringe mixed-use zone (9,667 acres), which have a baseline density limit of 1 du/5 ac, are neither sending nor receiving areas.	
Permanent conservation easement on property is required for severing TDRs.	
Sending areas	
Rural fringe mixed-use zone designated sending areas	
Land area	41,535 acres
Baseline density limits	1 du/40 ac
TDR allocation rates	
Baseline	1 TDR/5 ac
Early entry bonus[3]	1 TDR/5 ac
Environmental restoration and maintenance bonus[4]	1 TDR/5 ac
Conveyance to government agency[5]	1 TDR/5 ac
Native vegetation requirement	80% of land area

1. Program was held up in legal proceedings and became effective in June 2003.

2. This is the land area of the rural fringe mixed-use district only.

3. Landowners receive these bonus TDRs if they sever development rights before September 27, 2008.

4. Landowners receive these bonus TDRs if they agree to an environmental restoration and maintenance plan on their property.

5. Landowners receive these bonus TDRs if they donate their land to a government agency.

Receiving areas	
Rural fringe mixed-use zone designated receiving areas	
Land area	22,020 acres
Baseline density limit	1 du/5 ac
Density limit with TDRs[6]	1 du/ac
Urban residential fringe[7]	
Baseline density limit	1.5 du/ac
Density limit with TDRs	2.5 du/ac
Urban areas	
Density increase allowed with TDRs[8]	3 du/ac

5. Landowners receive these bonus TDRs if they donate their land to a government agency.

6. Developers may also create "rural villages" with mixed-use development; with TDRs, minimum density is 2 du/ac and maximum density is 3 du/ac. See text for more discussion of rural villages.

7. To transfer development to this area, TDRs must come from sending lands located within one mile of the urban subdistrict boundary. The purpose of this provision is to allow "density blending" on properties that straddle urban areas.

8. Baseline density varies by zone but increase with TDR use across zones; this is for infill development in urbanized areas. Minimum parcel size is 20 acres.

Property owners were initially unhappy with this restrictive zoning. However, because of the state interventions, they had already seen their land limited to, in most cases, even less dense development—1 dwelling unit per parcel, regardless of parcel size. According to county officials, even more problematic were the new restrictions on allowable uses on the land (Weeks et al. 2006). Only conservation uses and some agriculture, along with residential uses according to the prescribed density limits, were permitted. Previous uses, such as churches, golf courses, child-care centers, some mining operations, and others, were dropped. Property owners have complained that TDRs compensate only for lost residential uses, not all of these other previous uses of the land.

In an attempt to appease some of these interests and to encourage participation in the program, in October 2005 the county established bonus TDRs for particular activities, listed in Table 9.1. If the landowner engages in environmental maintenance and restoration activities, he receives an extra 1 TDR/5 ac. To get the bonus TDRs, the landowner must have a restoration management plan approved by the county, and that plan must include a listed species management plan, an exotic vegetative removal and maintenance plan, and financial assurance, such as a performance surety bond, that the plan will be implemented. In some instances, active mitigation programs satisfy this requirement. If a landowner relinquishes ownership after selling TDRs and conveys the property to a government agency, he gets an additional 1 TDR/5 ac. The county is encouraging conveyance because management of the land in the sending areas is a serious concern, with problems like invasive species, fire risk, and drainage. It is fair to say that conveyance is a point of emphasis for the county planning department staff managing the program. Finally, there is an "early entry" bonus of 1 TDR/5 ac if TDRs are sold before September 27, 2008. The

combination of these bonuses means that the owner of a 40-acre parcel could have as many as 32 TDRs to sell, if she met all the criteria.

One of the criteria for having TDRs severed from a sending property is that a permanent conservation easement be placed on the land, barring it from any future development. The development rights cannot be reattached to the land. Other requirements for severing TDRs include filing the appropriate application with the county, which includes a title search and statement listing the price at which the TDRs are being sold, along with other information. The TDR sale is "by right"; no approval by the county is necessary.

Receiving lands. Baseline density for receiving areas in the rural fringe mixed-use zone is 1 du/5 ac; with the use of TDRs, density can go as high as 1 du/ac. This means that the density bonus is 500 percent. In addition, there are bonus provisions if more native vegetation is preserved on the receiving site. A property must have a minimum of 40 acres to be a TDR receiving site. One TDR is needed to build an additional unit. Use of the TDRs in a receiving area is subject to the normal permits and approval processes that apply to any development project, but as with severing of TDRs from sending properties, no special approval by county commissioners or other governing bodies is required for TDR use.

TDRs can also be used to increase development in "rural villages." These villages are permitted in receiving areas in the rural fringe mixed-use zone, and a maximum of four villages, which must be at least 3 miles apart, is allowed. They must be mixed-use zones with a minimum residential density of 2 du/ac and a maximum of 3 du/ac. For each TDR used in a rural village, the developer is given another to use for free; thus there are bonuses associated with building in rural villages. Also, if 10 percent of the units built in a rural village are affordable housing, the developer gets an additional 0.5 TDRs. These density increases are permitted up to 2 du/ac and then are capped. Rural villages have other requirements as well; they must be at least 300 acres but not larger than 1,500 acres and are required to have a greenbelt of open land around them.

All development on receiving properties needs to be clustered. The regulations do not specify a percentage of open space but instead limit the maximum lot size for a single-family detached dwelling unit to 1 acre. They also state that the clustering must be done so as to maximize habitat protection, preservation of native vegetation, connections to adjacent preserved and natural lands, and maintenance of wildlife corridors.

TDR receiving areas also lie in the urban residential fringe subdistrict, an area between the rural fringe and the more urbanized areas to the west. The baseline density in this subdistrict is 1.5 du/ac; with TDRs, density is permitted to increase to 2.5 du/ac. To transfer development to this area, the program specifies that TDRs come from sending lands located within 1 mile of the urban subdistrict boundary. The purpose of this provision, according to county officials, is to allow "density blending" on rural fringe properties that straddle urban areas. The coastal urban area is also a TDR receiving area. Any receiving site in the coastal urban area must be at least 20 acres and have public water and sewer access; these areas are given bonus density up to 3 du/ac with TDR use.

Connections to public sewer and water service are prohibited in the TDR sending areas, to further discourage development of properties in those locations. TDR receiving areas, by con-

trast, either have water and sewer or will have them in the future because of a county commitment to provide them.

The county sets a floor for TDR prices. Currently, it is $25,000; thus developers purchasing TDRs from private property owners must pay at least $25,000 for each TDR purchased. The county set this floor price at around the same time that it instituted the bonus TDR provisions. In the early days of the program, property owners were not selling TDRs and it appeared that the price offered for TDRs was less than the price being paid for the land itself. A great deal of land in the rural fringe mixed-use sending areas was being sold.

Results of the Rural Fringe TDR program. Activity in the Rural Fringe TDR program has picked up since the adoption of the bonus credits and as developers and landowners have gained experience with the program. As of mid-January 2007, the program had placed roughly 2,200 acres of sending lands in the rural fringe mixed-use district under conservation easement, with an additional 1,400 acres pending approval (Thompson 2007). Approximately 1,000 TDR credits had been issued, including all bonus credits. Currently under consideration by the county is a proposal by the Collier Soil and Water Conservation District to accept conveyance of approximately 7,000–8,000 acres of land in the North Bell Meade area (see Figure 9.2, above). Landowners in that area would be able to sell TDRs and obtain all 3 bonus TDRs, including the conveyance bonus. Many details of the arrangement have yet to be ironed out, however.

The Collier program is playing out somewhat differently from many other TDR programs. In most cases, the land from which the development rights are severed is owned by a developer or by a subsidiary of a development company. Thus, land in the sending area is sold by individual landowners to companies that plan to use the development rights on other projects. Most of the properties in the sending areas are unoccupied and do not have agricultural or other activities on them. One of the most active participants in the program purchases sending land under a land trust agreement with a trustee (Thompson 2006). Thus far, many more TDRs in Collier have been severed than have been redeemed (that is, transferred to a receiving property); as of January 2007, three receiving area developments had used TDRs. This is likely due to the incentives provided by the early entry bonus, which expires in September 2008. Thompson (2006) reports that, although developers account for most of the activity, some individual landowners have applied to sever their TDRs as well.

In early 2007, a slowing in the housing market in Collier County affected the TDR program. County planning staff report that the developer of one of the receiving area projects had planned to build the first rural village but has since pulled back its proposal. In addition, that same developer, which owns sending area properties, has decided to postpone some of its TDR severance applications (Thompson 2007).

It is difficult to know what the effect of the price floor has been in Collier, but in general, a price floor may simply reduce demand for the TDRs. It is better to simply let market forces dictate the equilibrium TDR price. In fact, the price floor in Collier may be contributing to the current scenario, in which the land is purchased by large development companies that then sever the rights from the properties but do not immediately use them in a receiving area subdivision.

Rural Lands Stewardship Area Program

The more rural northeastern lands in Collier County are primarily agricultural and support cattle grazing, citrus groves, and vegetable farms; the town of Immokalee, with a population of approximately 18,000 in 2000, is the hub of the area. The rural lands stewardship area, which covers 194,000 acres of land, or 15 percent of the county land area, has only a few hundred landowners, compared with thousands in the rural fringe mixed-use zone area, even though this area is more than twice as large. Six major landowners own very large parcels (Weeks et al. 2006). The area is not under as much threat of development as the rural fringe mixed-use zone— between 1985 and 2000, land in agriculture increased by 5,000 acres, and no new subdivisions had been approved (WilsonMiller 2001). However, the county has an interest in managing the development that is expected to occur, protecting prime agricultural lands, and preserving wetlands and other environmentally sensitive areas. A new town and new university, Ave Maria University, are being built and will rely on the transfer of development credits from preserved land.

When the county was faced with developing amendments to its growth management plan, the six major landowners in the rural lands stewardship area asked the county for permission to gather data themselves and make recommendations. Permission was granted and a consultant was hired to use GIS technology to map the land uses in the area and come up with recommendations. Regulations were then drafted, modified, and adopted by the county.

The TDR program in the rural lands stewardship area is complicated. The consultant's study assigned each acre of land a natural resource index equal to the sum of six individual indexes based on land characteristics, such as soils, land use and land cover, and listed species habitat. These index values help determine which lands are sending lands and which are receiving and the number of TDRs—called stewardship credits in this program—that landowners in sending areas have for sale. Sending areas were not designated at the outset of the program; rather, property owners can petition to have their land designated. Stewardship credits are generated on a property by removing a layer of land use. Each parcel of land is "covered" with eight land use layers: residential uses, general conditional uses, earth mining and processing uses, recreational uses, two types of agricultural uses, agriculture support uses, and conservation, restoration and natural resources. The layers must be removed sequentially and cumulatively in the order listed. The thinking behind the use of land use layers was to recognize the potential of land to support other uses besides residential development and to provide a benefit to landowners—additional credits for sale—when they remove those uses from their land.

The Collier Rural Lands Stewardship Area program is the model espoused by the state through two laws enacted in 2001 and 2004. Senate Bill 1922, signed into law in June 2001, established a pilot program that counties could adopt. In April 2004, Senate Bill 2188 made the program permanent. Counties must designate all or some portion of their lands that are considered predominantly agricultural, rural, open, or open-rural as a rural land stewardship area. They must then establish land use regulations that include the use of a TDR-type mechanism—that is, certain lands are sending lands and others are receiving, and development is transferred from one to the other. As in Collier, the land use layer concept is espoused

On a sending property, the formula for determining how many total credits a landowner has to sell is the following:

Credits for sale = Number of acres * Index value * layers removed

As in the Rural Fringe TDR program, this program also has early-entry bonus credits. These credits range from 0.5 to 1 credit per acre and apply until January 30, 2009. Any land designated as a flow-way stewardship area, habitat stewardship area, or water retention area is considered a likely candidate for designation as a sending area because of the higher index value assigned to it.[73]

Receiving areas were also not designated at the outset of the program, but landowners can petition to have their land so designated. Land is assigned a "receiving area suitability factor" based on such attributes as the natural resource indexes, as well as parcel acreage, infrastructure availability, road access, and others. A landowner needs 8 stewardship credits for every acre of receiving area. All receiving areas must be compact, mixed-use developments, and no increase in density is permitted except through purchase of credits.[74]

This summary of the Rural Lands Stewardship Area program is highly simplified. The full regulations are extensive and include several special provisions. For example, in addition to providing an index value for each acre of land in the district, the program includes special index upgrades for particular locations. It is also possible to adjust the base index with a restoration potential index value, based on an evaluation by an environmental consultant. This separate index allows for the calculation of restoration stewardship credits in addition to the baseline credits. Particular locations in the RLSA are given four additional Stewardship Credits, others, two additional Stewardship Credits.

Results of the Rural Lands Stewardship program. As of May 2006, six sending areas had been approved in the stewardship area, with two more pending. The first four sending areas designated were in the Ave Maria area and totaled 5,286 acres; 7,878 credits were generated from the land and are to be used in a receiving area in Ave Maria that totals 985 acres (Wilson-Miller 2003).

The land use layers idea is interesting, and it will be instructive to see how well the program works in Collier and any other counties that might be experimenting with it. It is likely to be feasible only in a very rural area with a limited number of landowners and minimal development pressures.

Conclusions

As in many coastal counties in Florida, Collier County has relatively high-density development along its coastline and is seeing the expansion of development to inland areas. These inland areas have unique resources that both the county and the state of Florida want to protect, including important wildlife habitat and native flora and fauna. In addition, water resources are in a critical state in the region, and land use is intricately linked to water quality and water supplies.

To address these problems, Collier County developed a TDR program to use in its designated rural fringe mixed-use district, a 73,000-acre area on the border of more developed urbanized districts; this program is the focus of the county's growth management efforts. A separate TDR program operates in the rural lands where development pressures are minimal.

Since the Rural Fringe TDR program became operational in mid-2003, it seems to be gradually achieving some of its goals. TDRs are being severed from properties in the sending area, and a total of 2,200 acres of land has been preserved. The early-entry bonus seems to have sparked TDR sales; this bonus ends in September 2008, and there is some concern about whether

the activity is sustainable. Sending area acreage totals about 41,500 acres, with roughly half of that in private ownership and the rest in public; thus the county has a long way to go to reach its land preservation goals.

The county needs to get the market working better on its own, and this means that some attention should be paid to the demand side. Although the bonus TDRs have led to TDR severance and thus land preservation (the easement is placed on the property when the development rights are severed), many of these development rights have not yet been used in receiving areas. Thus far, three developments have used TDRs. A review of planned unit developments near the rural fringe mixed-use district shows relatively high-density developments. On the one hand, this indicates that the demand for extra density probably exists in the rural fringe. On the other, though, it is possible that developers will build first on properties near the rural fringe rather than in it if the PUD option is available. As we saw in St. Mary's County, Maryland (Chapter 5), "free" density through PUDs and other options can hurt TDR programs.

Another problem on the demand side of the market in Collier stems from the price floor. Price floors (or ceilings) create inefficiencies in the market—in this case, the artificially high price makes landowners want to sell more TDRs than they otherwise would but makes developers want to buy fewer, creating a market disequilibrium. TDR sales are below what they would be in a free market, and less land is protected. If the government is interested boosting the market to get sales going, a preferred alternative would be to purchase some development rights at a price landowners are willing to accept but not an artificially inflated price. The county could either retire the rights or transfer them to a receiving property. For the program to succeed in the long run, the county needs the TDR market to function on its own without any price interference from the government.

Assuming the county removes the price floor at some point, the more fundamental question is whether this kind of new-generation program, in which receiving areas are designated outside the established urban areas, shows some promise. In our view, it does. First, it avoids conflict with current residents in the urban areas, which is a serious problem in many programs. Second, it allows some growth where it is beginning to happen anyway. Instead of allowing the entire rural-urban fringe to be developed at relatively low densities, however, the TDR program tries to protect some of that land while developing the remainder more intensively than it otherwise would be. Collier County looked at its growth patterns and at the likelihood of getting additional density into Naples, Marco Island, and surrounding residential areas and felt that extra density in those areas was neither likely nor, in some locations, desirable. In fact, the earlier TDR program in the county, which focused on urban receiving areas, had failed to accomplish its goals. It will be interesting to observe future development in the county.

One thing we hasten to point out is that the density limits in the sending areas are very low. At 40 du/ac, development options are extremely limited. The Collier Rural Fringe program may end up working simply because landowners have few viable alternatives for their land. In other words, one cannot evaluate the TDR program without also looking at the downzoning that took place along with it.

CHAPTER 10

Sarasota County, Florida: Planning for "Build-Out"

Sarasota County's original TDR program, which focused on preventing development of small, substandard suburban lots, began in 1982. In the late 1990s, it was replaced with a program that targeted preservation of conservation lands. In 2004, this program was itself replaced with the current 2050 Program. We describe each program but focus on the details of the 2050 Program. Sarasota County is similar, in many ways, to Collier County (Chapter 9). We will highlight the similarities and differences between these two Florida counties. We begin with some economic and demographic background on Sarasota County, then turn to a discussion of the TDR programs.

Background on Sarasota County

Sarasota County, on the Gulf Coast, is just south of Tampa and two counties' north of Collier County (see the map of Florida, Figure 9.1). Like many other counties in Florida, it is experiencing high growth and has a peak winter population significantly greater than its permanent population. The number of new construction building permits has risen every year since 2000, more than doubling from 3,041 in 2000 to 6,886 in 2005. As in Collier County, there is a distinct difference in land use between the coastal areas and inland. Although the population density of the county overall is 570 people per square mile, the city of Sarasota has a density of 3,540 people per square mile. Total county land area is 365,800 acres, and population in 2005 was estimated to be 367,867. The county has four incorporated cities: Sarasota, Venice, North Port, and Longboat Key; Sarasota is the largest, with a population in 2004 of 54,848. Seventy percent of the county's population is in the unincorporated areas.[75]

The land use map in Figure 10.1 indicates North Port—a geographically large area although the population in 2003 was only 35,272. North Port has seen a great deal of development in recent years, and more is planned for the near future. The city, which began as a subdivision with 60,000 platted lots, has been aggressive in annexing county land (Lewis 2006). In the year 2000, it increased its size by 27 square miles, an area larger than the cities of Sarasota and Venice combined (Hutchinson 2005b). The county has been working for a number of years to influence the pace and type of development in the area. In mid-January 2007, the county and the city reached terms on a joint planning agreement that outlined areas for future annexation and appropriate land uses in each. In mid-March 2007, a citizen-led county charter amendment was passed, stat-

ing that any land annexed without a joint planning agreement must meet county land use rules. This amendment caused the city of North Port to opt out of the agreement, and thus issues related to land use and annexation are still in flux (Lewis 2007).

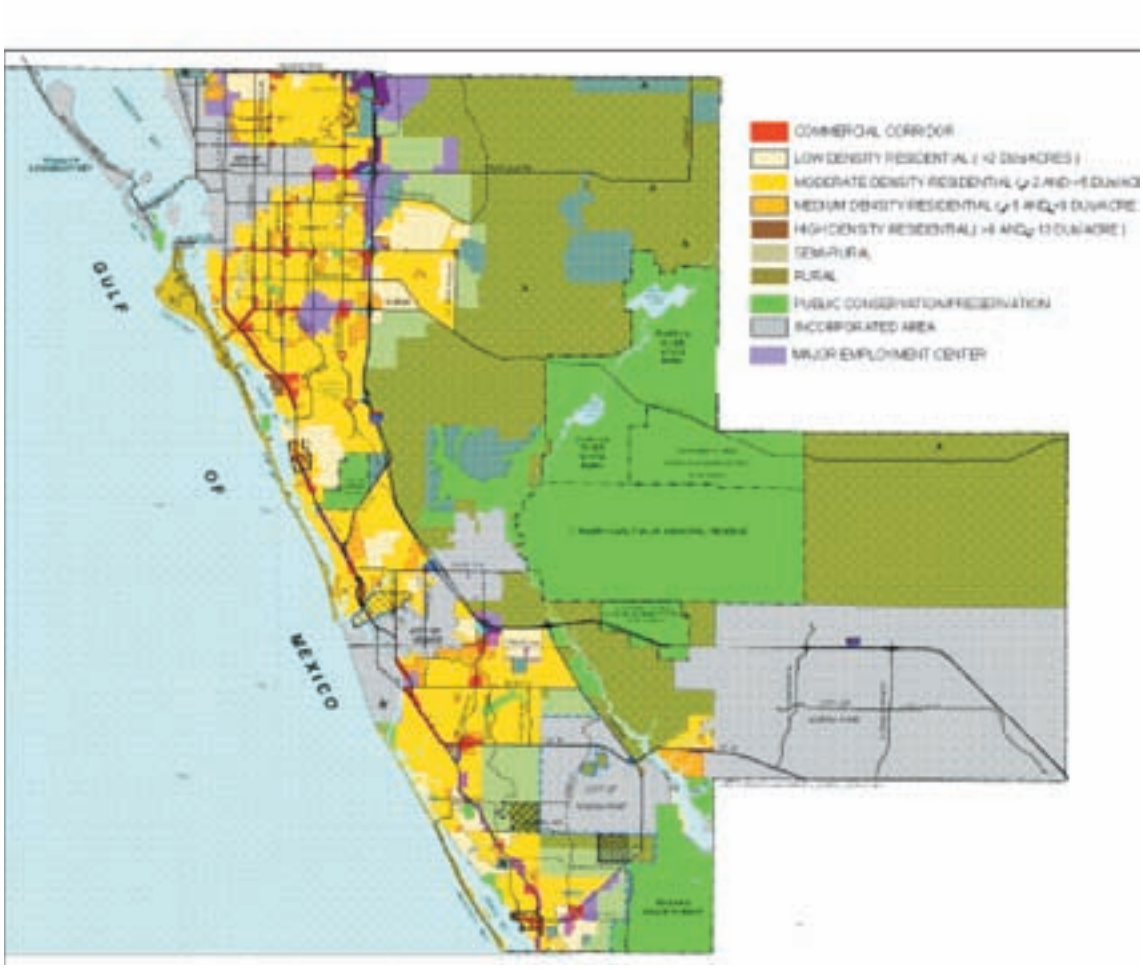
Figure 10.1 also shows the large area of public conservation lands and rural lands to the east of Interstate 75 in Sarasota County. The Myakka River, one of only two federally designated wild and scenic rivers in Florida, flows through this area and is rich in native flora and fauna.[76] Protecting the environmentally sensitive lands along the river is a priority for the county.

The interstate serves as a type of rural-urban boundary in Sarasota County. In fact, for much of its length (until approximately the point where it turns eastward), it forms the boundary of the county's urban service area, which has public water and sewer and is designated for higher-density development. The county has also designated a "future urban service area" that encompasses some additional land in the southwestern portion of the county.

Sarasota is a relatively high-income county, though not as high as Collier. The Southwest Florida Regional Planning Council (2005) estimated median family income for a family of four in the year 2005 for each of the five counties in the planning area. Collier's was the highest at

FIGURE 10.1

LAND USE MAP OF SARASOTA COUNTY



Source: Sarasota County Planning and Zoning website. Future Land Use map, (http://www.scgov.net/AppDocuments/1/2011/FLU_LDUSE_11x17April05.pdf.) Some land use designations left off the reprint here; see original document for more detail.

$63,300, and Sarasota's the second highest, at $55,900.[77] A disparity in income and house prices between the coastal and inland areas is not apparent in Sarasota, in contrast with Collier, where Naples is quite wealthy. In fact, the median value of owner-occupied housing in the city of Sarasota was $96,000 in 2000, below the county figure for that same year, $122,000. The median house value in 2004 in the county was $175,435, and median household income for that same year was $44,762, higher than for Florida as a whole.[78]

Agriculture it is not a significant component of the county's economy. In 2002, 121,310 acres of land was in agriculture, or about one-third of the total county area. Forty-two percent of this land was pastureland, and cropland and woodland amounted to approximately 28 percent each. The county had 371 farms in 2002, a 20 percent reduction from 1997. The total value of agricultural products sold was $17.8 million in 2002, with the largest value coming from nursery and greenhouse products; cattle and other livestock are also important. Compared with the 66 other counties in Florida, Sarasota ranked 50th in terms of total value of products sold; by contrast, Collier County ranked 7th.[79]

Sarasota County's TDR Programs

Traditional TDR Program

Sarasota County's original TDR program began in 1982. This program is briefly summarized in Pruetz (2003). Its goal was to prevent development on substandard residential lots and protect environmentally sensitive lands and agriculture. Sending and receiving areas were defined very broadly and were based on a zoning overlay system. Eligible sending lands were lots that were not compliant with the land development regulations (because of either drainage problems or a lack of paved streets); environmentally sensitive areas; areas that should be retained as agriculture, open space, or conservation uses; areas of historic or archaeological significance; and parcels on the Barrier Islands. The zoning overlay used on these properties was the residential sending zone. Eligible receiving lands were areas inside the designated future urban area, as well as town or village centers and the overlaying residential receiving zone inside the existing urban service boundary.

This original TDR program in the county, which the county refers to as its "traditional" program, relied on a multistep process for transferring development and protecting land. A property owner needed to have his land designated as a sending area, and the county would rezone the property by placing an overlay on it. This first step did not remove the development rights, however. In a second step, the number of TDRs available from the property would be determined and a transfer permit filed and approved. At this point, the development rights would be legally removed from the property. Finally, transfer to a receiving site would be approved through passage of another zoning ordinance that changed the allowable density on the designated receiving site.

Despite the high administrative and transaction costs associated with this approach, county officials report that between 1987 and 1991, the program worked well (Lewis 2006). A total of approximately 8,200 acres was protected, though most came from one sending site designated in 1989. The remaining sending sites were all substandard subdivisions and thus, while the number of lots retired on those properties was high, the acreage total was small. Pruetz (2003) indi-

cates that six projects were built in receiving sites using 52 TDRs; this figure is consistent with county zoning maps on the TDR program. All activity in the program halted after 1991 (Lewis 2006).

Conservation TDR Program

In 1999, a new TDR program was adopted in Sarasota County. This program also relied on a zoning overlay approach, with rezonings for individual sending and receiving sites. Designated sending lands were in either the residential sending zone—as with the earlier program, these tended to be properties with substandard residential lots—or the conservation sending zone properties. The latter were lands of high ecological value, areas of special flood hazard, category 1 and 2 storm surge areas, and watercourses and sloughs, along with their associated wetlands. A conservation sending zone property needed to be combined with a specific kind of receiving site—either a future urban residential receiving zone or a future urban development overlay district. In addition, the total land area of the sending property and the receiving site needed to be at least 500 acres.

Additional receiving zones in this program were the residential and the high-density residential receiving zones, both to be used with properties in the residential sending zone, not the conservation sending zone.

Property owners in the residential sending zone were allocated transferable development rights in accordance with the zoning density limits. For example, a 100-acre property with a 1 du/2 ac density limit would be issued 50 TDRs. Property owners in the conservation sending zone were allocated 1 TDR per acre.

Density bonuses in the residential receiving zone were 25 percent; that is, developers could use TDRs to build to density limits 25 percent above the baseline in the area. Those baselines varied depending on the underlying zoning designation for the property. Allowable density in the other receiving zones (future urban residential, future urban development, and high-density residential) were determined on a case-by-case basis using plans for individual areas. In the high-density residential areas, density was capped at 25 du/ac.

One transfer from the conservation sending zone to the future urban residential receiving zone took place under this TDR program. In 2004, 730 acres was protected in the southern part of the county. with 958 acres of adjacent land developed as a planned unit development. The program was abandoned in 2004 when the 2050 Program was adopted. According to Lewis (2006), the conservation sending, future urban development, and future urban residential zoning classifications have been eliminated because annexations and other development options made them unnecessary.

In both of the earlier TDR programs—the 1982 traditional program and the 1999 conservation program—Sarasota County relied on the zoning overlay approach, in which individual rezonings are adopted for each sending and receiving property. Landowners needed to opt into the programs by requesting that their properties become designated sending zones. The transfer process required planning commission approval and approval by the board of county commissioners. The administrative and transaction costs of such a system can be high. Moreover, a great deal of uncertainty exists for property owners and developers. The traditional TDR program remains on the books in Sarasota County but is not being used; the 1999 conservation program has been replaced by the 2050 Program, which we describe below.

Sarasota County's New Program

The most recent TDR program for Sarasota County was adopted in 2004 and is known as the 2050 Program. We begin with some background leading up to its adoption, then discuss its features.

Background. In 2001, a new comprehensive plan was passed in Sarasota County called Sarasota 2050. This plan was based on extensive analysis and projections of growth and land use change in the county through the year 2050. The analysis concluded that with approximately 2,200 new dwelling units built each year, an estimate based on recent experience in the county, a total of 110,000 new units would be needed in the county by 2050. Some sensitivity analyses yielded estimates above and below this figure, but 110,000 was considered the county's best guess of future demand. The county also calculated that the urban service area could handle 34,000 of these units, which amounted to about another 15 years of building (Beatty and Dominski 2001). Most of the additional capacity in the urban service area is in the southern part of the county; buildout in the north urban service area is expected in 2007. If the boundary were moved to include the future urban service area that the county has delineated, an additional 18,470 units could be built (Beatty and Wisniewski 2001).

Using those dwelling unit calculations—the total estimated demand and capacity in the current and future urban service areas—the remaining demand of approximately 57,500 units could be met by building in the unincorporated area of the county, outside the future urban service area. This relatively large number of units and a concern over development of environmentally sensitive lands in the rural fringe zones led to adoption of the new TDR program in 2004.

2050 Program. Unlike the earlier programs, the 2050 Program does not use the zoning overlay approach but rather designates specific sending and receiving areas. The program focuses on 47,500 acres of land on the urban-rural fringe, the "2050 area." On the map in Figure 10.1, these are basically the lands labeled rural and semirural, with the exception of the large agricultural reserve area in the far eastern region of the county. The 2050 area lies outside the urban service boundary and is not currently served by water and sewer. There is some agriculture in the area, but the lands of most concern are the environmentally sensitive pine flatwoods, wetlands, mesic hammocks, and river and stream buffers.[80] In the 2050 analysis leading up to the new plan, the county recognized that growth and development were taking place in the area and were likely to continue. Its adoption of the new TDR program was an attempt to preserve the more environmentally sensitive portions of this land from development and cluster the development that does take place.

The 2050 Program is summarized in Table 10.1. TDR sending areas in the 2050 area are the greenway, village, and hamlet districts. The agricultural reserve resource management area (the far eastern portion of the county labeled "rural" on the map), which totals 36,000 acres, is also a sending area even though it lies outside the 2050 area. Baseline density limits in the sending areas vary from 1 du/5 ac inside the 2050 area to 1 du/160 ac on the agricultural reserve lands.[81] The TDR allocation rate varies depending on the type of land; within the 2050 area, it is typically 1 TDR per acre but in some locations can be as high as 2 TDRs per acre. In the agricultural reserve, it is based on the underlying zoning.

FIGURE 10.2

SENDING AND RECEIVING LANDS IN SARASOTA COUNTY 2050 TDR PROGRAM

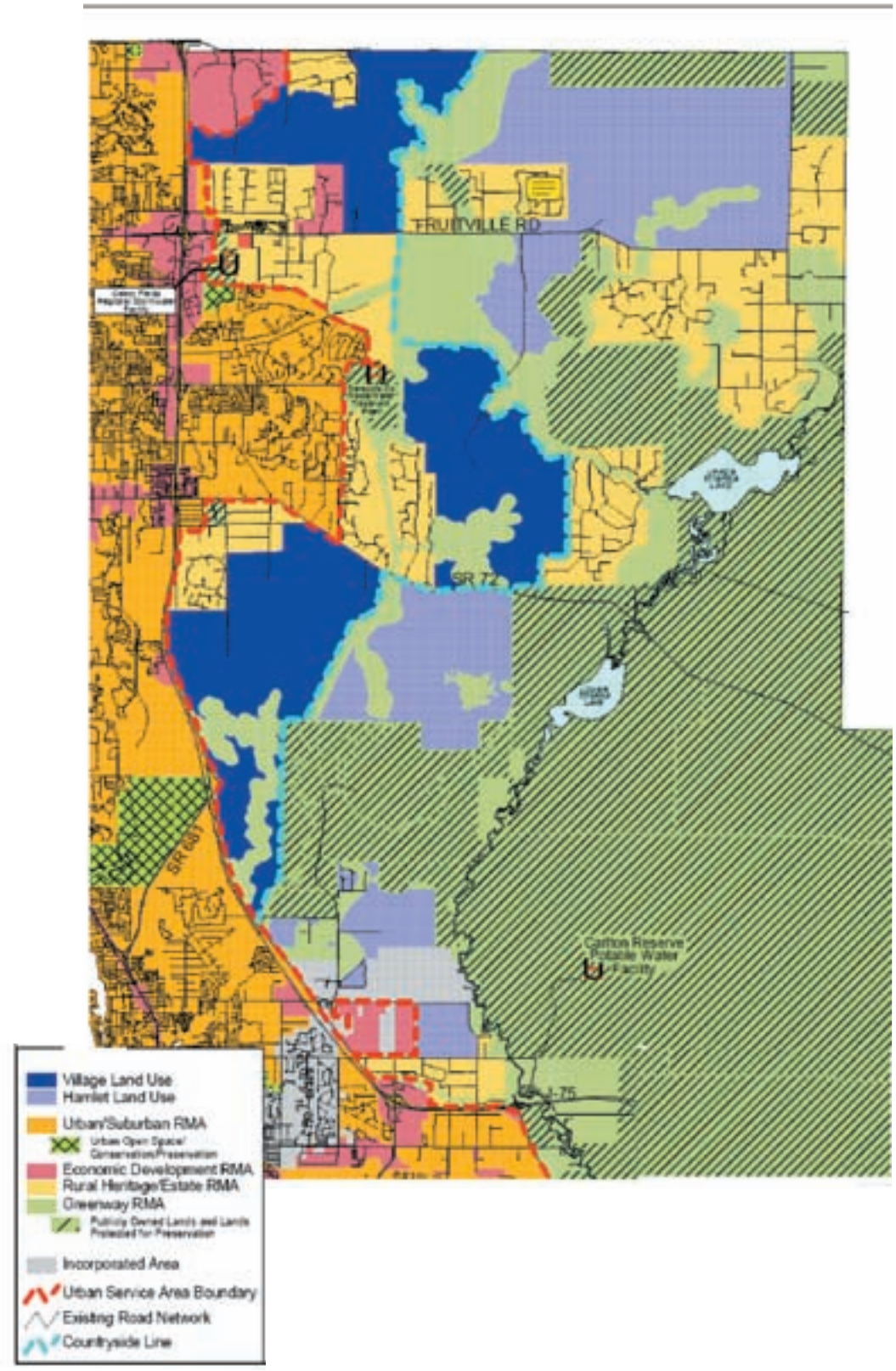


TABLE 10.1

FEATURES OF SARASOTA COUNTY'S 2050 TDR PROGRAM

Year established	2004
Land area[1]	83,500 acres
General information	
Program goal is preserving agricultural lands, environmentally sensitive lands, and open space and channeling future building to mixed-use, compact developments in designated areas.	
TDR sale is "by right," and use is "case by case."	
Sale of 1 TDR puts permanent easement on entire sending parcel acreage; no development allowed.	
Overlap in sending and receiving area on some rural lands (village and hamlet land uses); that is, landowners can either sell TDRs or use TDRs to develop more densely than baseline density limits.	
Sending areas	
Greenway, village, and hamlet	
Land area	47,500 acres
Baseline density limit	1 du/5 ac[2]
Agricultural reserve	
Land area	36,000 acres
Baseline density limit	1 du/160 ac
TDR allocation rate	Up to 2 TDR/ac in greenway, village, and hamlet; 1 TDR/160 ac in agricultural reserve
Receiving areas	
Village	
Land area	16,089 acres
Baseline density limit	1 du/5 acres
Density limit with TDRs	3 du acre
Hamlet	
Land area	20,411 acres
Baseline density limit	1 du/5acres
Density limit with TDRs	2 dus/5acre

1. The 2050 area is 47,500 acres; the 83,500 total in the table includes the agricultural reserve resource management area, which is 36,000 acres.

2. Baseline density can vary and is based upon future land use designation.

Receiving areas are village and hamlet districts. The village areas total 16,089 acres, and hamlets, 20,411 acres. The baseline density limit in these zones is 1 du/5 ac. With TDRs, the limit goes to 3 du/ac in the villages and 2 du/5 ac in hamlets. Clustering is required in these areas for all development, and minimum and maximum densities are imposed on the developed portion of each parcel. In villages, the developed area of the parcel must have a minimum density of 3 du/ac and a maximum of 6 du/ac; in hamlets, the developed area must have a minimum of 1 du/5 ac and a maximum of 1 du/ac. According to Lewis (2006), hamlets are considered more rural than village zones, and developers in those locations might reach maximum density simply through clustering and no TDRs. This outcome is not feasible in the village areas. Figure 10.2 shows the hamlet, village, greenway, and resource management areas in the county. A few other land use designations are also denoted on the map, but the TDR sending and receiving areas are the hamlet, village, and greenway districts on the map (the agricultural reserve is not shown).

Results from 2050 TDR Program

According to county officials, as of mid-January 2007, no TDRs have changed hands, and thus no land has been preserved with a conservation easement. Lewis (2007) believes that by late 2007, there will be activity in the program. The simplification of the TDR process compared with Sarasota County's earlier programs bodes well; however, the critical issue is the demand for additional density in the village areas relative to the supply of TDRs.

Conclusions

Sarasota County's extensive analysis of future growth and its implications for land use in the county yielded some insights about the likelihood of conversion of open lands to residential and commercial uses in the future. The TDR program was an attempt by the county to dictate how that development takes place, encourage more compact uses, and preserve environmentally sensitive lands in areas that may be threatened.

This is one of the "new generation" programs that have placed receiving areas outside urbanized zones. Because the program is so new and covers only a fraction of the county land area, it is too soon to judge whether it will succeed. Various features of the program indicate that it has a better chance than Sarasota County's earlier TDR programs. However, much remains to be seen.

CHAPTER 11

Chesterfield Township, New Jersey: Using TDRs in a Master Planned Development

Chesterfield Township in Burlington County, New Jersey, is approximately 10 miles from Trenton and 37 miles from Philadelphia. Its TDR program, which began in 1998, has served as a model for other communities in the state. As we will explain below, New Jersey is promoting the use of TDRs in various ways and in 2004 passed enabling legislation. The law specifically states that TDRs should be used to "accommodate growth and preserve open space and agricultural lands," and Chesterfield's program is structured to do both of these things. This is another example of the new generation of TDR programs: it accommodates growth outside existing urbanized areas, usually on the rural-urban fringe, while simultaneously trying to protect farmland, open space, and environmentally sensitive areas.

Background on Chesterfield Township and Burlington County[82]

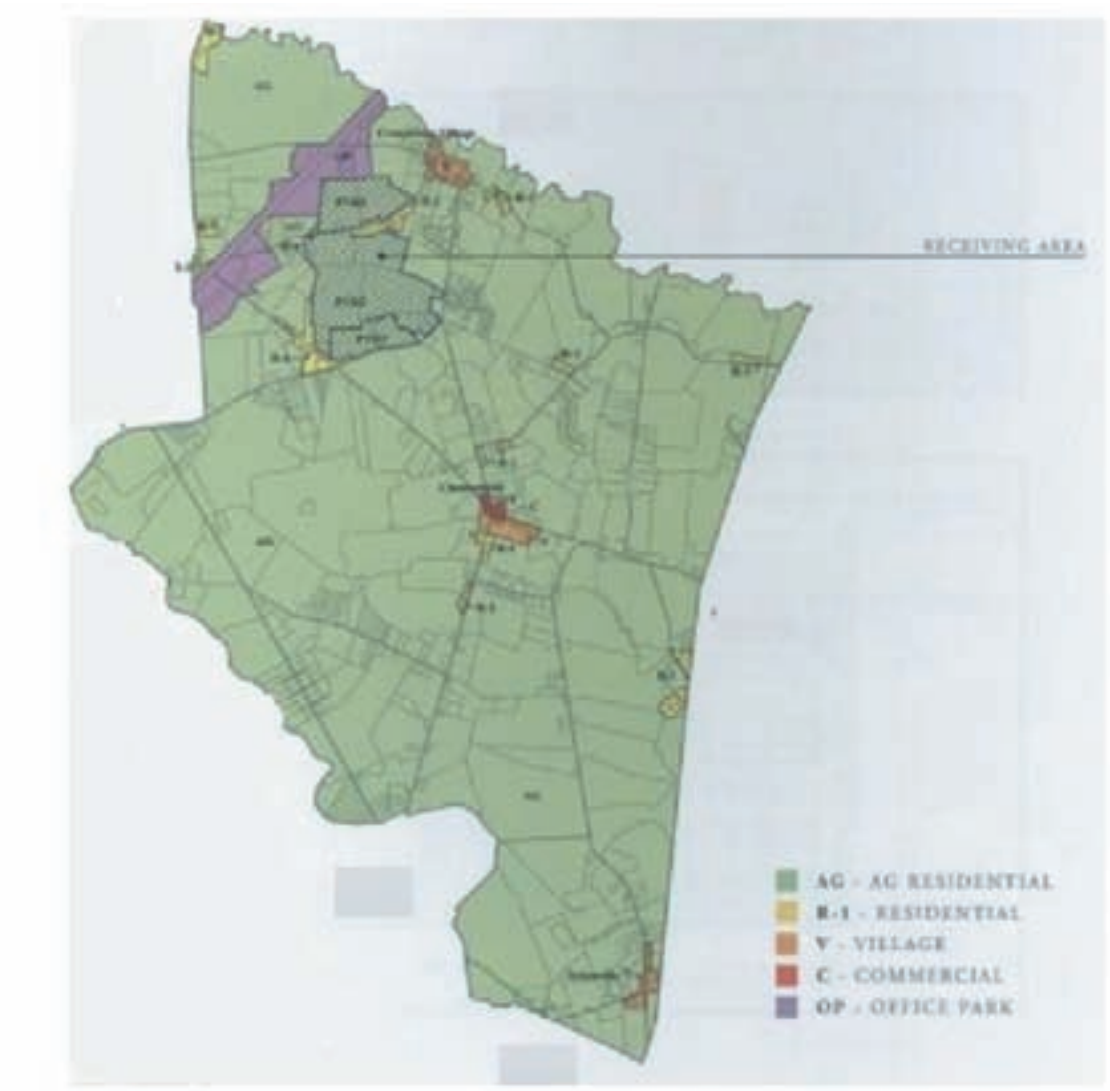
Burlington County lies in central New Jersey, and Chesterfield, one of 40 townships in the county, is in its far northern region. The county is relatively large, with 515,200 acres, and its population in 2000 was 423,394. Chesterfield Township covers approximately 14,000 acres; its population in 2000 was only 5,955, and the estimate for 2004 is 6,340. It is very sparsely populated, with only 924 dwelling units within the geographical limits. Figure 11.1 shows the township's zoning, which is mostly agricultural. The cross-hatched "receiving area" is the new development where TDRs can be used; we say more about this area in our description of the TDR program below.

The county is relatively wealthy. In 2004, estimated median household income was $63,354, compared with $57,338 for the state of New Jersey as a whole and only $44,334 for the United States. House prices are comparatively high as well. In 2000, the median value of owner-occupied housing was $197,500, higher than the median for the state ($170,800) and for the United States ($119,600).

Agriculture is important not just for the township but for Burlington County as a whole. The county had 111,237 acres of land in active agriculture in 2002, an increase of 7 percent from 1997. Whereas farmland has declined in recent years in many of the other communities in our

FIGURE 11.1

ZONING MAP OF CHESTERFIELD TOWNSHIP



study, farm acreage is actually on the rise in Burlington County. Average farm size also increased over the 1997–2002 period, from 111 to 123 acres. Farmers in Burlington County earned more than $83 million in sales of agricultural products in 2002, making the county the second-highest-earning county in New Jersey. Nursery and greenhouse products were the largest source of income, followed by tree nuts, fruit, and berries, and then vegetables and melons. Dairy cattle are also important, and horse farming is an important part of the landscape as well.

Although land remains relatively undeveloped in the county and agriculture seems stable, the proximity of Chesterfield and other parts of Burlington County to major population and employment centers suggests that land could be under threat of development. In the 1990s, some conventional subdivisions were built that interrupted the continuity of agricultural uses in the township. The heavily traveled New Jersey Turnpike runs through the county and is quite close to Chesterfield. Township officials began to feel, in the 1990s, that pressures were mounting to provide more residential development in the area to go along with the commercial growth in central New Jersey. In 1997, these pressures and the desire to preserve farmland led to adoption of a new and forward-thinking master plan for the township that included a TDR program to protect farmland. Zoning changes to incorporate the TDR program were adopted in 1998.[83]

Chesterfield's TDR Program

This TDR program was designed to preserve the rural character of the community by diverting potential development away from the agricultural area and into a focused, high-density urban development on the edge of town, close to the turnpike. Similar to the efforts in Sarasota County, Florida (Chapter 10), the township conducted an initial build-out analysis to estimate the development that was expected to take place in the township and would be permitted with current zoning density limits. In Sarasota, the county then took a "slice" and designated some parts for development, including TDR receiving areas, and some for preservation. In Chesterfield, the township designed a single master planned community as the only receiving site for all development rights. This receiving site is known as Old York Village and is the cross-hatched area in Figure 11.1. All land zoned for agricultural uses—the green areas in the figure—constitutes the TDR sending areas in the township. In the Sarasota and Collier counties' programs, in contrast, specific areas were designated as sending sites.

The Role Played by the State

Chesterfield's program is part of a statewide TDR initiative. In 1980, a TDR program was adopted in the Pinelands area of New Jersey, a million-acre region in the southern part of the state. The comprehensive management plan that set it up separated the Pinelands region into nine management areas with the goal of protecting environmentally sensitive resources throughout the region. The program allowed trading of development rights across jurisdictions within the Pinelands. As of June 2002, the program had preserved 27,750 acres of land.[84] It was considered so successful that New Jersey officials thought that similar programs should be implemented in other parts of the state. Pilot programs were initiated in Burlington County in the late 1980s, culminating in Chesterfield's 1998 program (and another program in Lumberton Township).[85]

In 2004, the state passed legislation enabling TDR programs in communities throughout the state and holding the Burlington County programs up as model programs. The legislation mandates that communities conduct extensive land use and population growth analyses, as well as analysis of infrastructure requirements, before establishing TDR programs. To facilitate this work, state grant funds are provided. The Office of Smart Growth in the Department of Community Affairs offers technical support to the communities and provides grant monies; the New Jersey Department of Agriculture provides funds as well (Mercer 2006).[86] The legislation also mandates that prior to adoption or amendment of any TDR ordinance, a township must (1) add a development transfer plan element to its master plan that identifies sending and receiving areas; (2) adopt a capital improvement plan for the receiving area zone; (3) add a utility service plan for the receiving zone; and (4) prepare a real estate market analysis to act as a reality check to ensure sufficient demand for TDR credits. Since the Chesterfield and Lumberton programs began, the state has initiated six other TDR demonstration projects. About a half-dozen other communities are also in various stages of developing TDR programs (Mercer 2006).

These programs and the state TDR law operate in conjunction with one of the most aggressive state land preservation programs in the country. New Jersey has a state farmland preservation program administered by the Department of Agriculture and the well-known Green Acres program administered by the Department of Environmental Protection. In 1999, the New Jersey legislature passed the Garden State Preservation Trust Act, which aims to protect 1 million acres from development over a 10-year period. An amendment to the state's constitution dedicated $98 million annually for 10 years for preservation efforts and authorized the issuance of up to $1 billion in revenue bonds. Subsequent bond measures have been offered as referenda and have passed, authorizing several million more dollars for open space and farmland protection. Local referenda have also passed, dedicating local tax dollars to preservation. The Green Acres program provides matching funds in these cases. In each year of voting tracked by the Trust for Public Lands, referenda in New Jersey account for a significant fraction of conservation financing activity nationwide.

Chesterfield Township's TDR Program

Sending areas. Sending areas in Chesterfield are all properties zoned agricultural and at least 10 acres in size. Such properties total 7,472 acres, which is more than half the area of the township. The baseline zoning on parcels in the agricultural zone that are larger than 10 acres and have been agriculturally active since 1986 is 1 du/10 ac.

When designing the TDR program, the township conducted an extensive analysis of potential building, given current zoning rules and land use pressures. In addition, it took into account the soils of individual properties, since septic tanks would have been used in the agricultural zone. Based on this analysis, the sending area parcels were allocated a total of 1,383.25 credits for transfer purposes. Given the requirements for credits in the receiving zone, these credits roughly equal the 1,200 units that are permitted in the receiving area. When a landowner sells his development rights, the entire parcel is deed restricted with a downzoning to 1 du/50 ac.

Each sending site parcel is assigned TDRs based upon its soil type: slight (good quality), moderate, or severe (poor quality). The following equation determines the number of TDRs assigned to each parcel:[87]

$$\text{No. TDRs} = (1.1)\left[\frac{\text{Acres of Slight soil}}{2.7}\right] + \left[\frac{\text{Acres of Moderate soil}}{6}\right] + \left[\frac{\text{Acres of Severe soil}}{50}\right]$$

As the formula shows, the more acreage and the better the soil quality, the more credits a landowner can sell. According to Weber (2007), the formula was designed so that the number of credits reflects the development potential of the land: parcels with soil quality that is more conducive to development would be allowed to sell more credits. Regardless of the original rationale, the formula provides incentives for landowners with better-quality soils to sell their development rights and preserve their land.

One final requirement of landowners is that they must sell the development rights to at least 50 percent of their total acreage in order to be permitted to sell any at all. This requirement ensures that large parcels are placed under easement and minimizes farmland fragmentation.

Receiving areas. The sole receiving area for TDRs is Old York Village, a new development located in a "greenfield" area of the township near the New Jersey Turnpike. The location was chosen to accommodate commuters and also so that traffic would not be drawn through the agricultural area of the township. The total size of Old York Village is 530 acres. It is has a detailed master plan with 12 parcels that developers can build according to specifications set out by the township. When fully built out, it will have 1,200 residential units. Seventy-two percent of the units will be single-family homes, with 7,000–10,000-square-foot lots.[88] Twenty percent of the units will be triplexes, and 2 percent, apartments. As required by state law, 6 percent of all residential units must be affordable housing. The receiving site also includes a 40,000-square-foot commercial development area that is structured in a traditional "main-street" style (Weber 2006). An elementary school will be located in the village and has been designated as the hub of the community.

Developers are required to provide water and sewer services to the village, at their expense, and also must pay development impact fees—required by a local ordinance—that will be used to provide recreational opportunities within the development and cover transportation improvements. According to Hardt (2004), the transportation impact fee for Old York Village totals $8 million, and the recreation fee, $3.9 million. Each developer is assessed a specific dollar amount per unit to cover the recreation fees; the transportation fee is assigned proportionally to the four developers building in the village (Hardt 2004).

The TDR program is structured such that a developer does not receive a density bonus by using TDRs to build in Old York Village but rather gets a building allotment for each TDR. For example, 1 credit is required to build a perimeter village home with a lot size of 8,000–10,000 square feet. Fewer credits are required for other kinds of homes: 0.9 credit for a village unit with a 4,500–7,000-square-foot lot, and 0.75 credit for a triplex with a 2,500–4,500-square-foot lot. The original density limit in the receiving area was 1 du/3.3 ac, which is the limit established for all parcels in the township that are less than 10 acres. The average density for the receiving area after it is developed as planned will be 2.14 du/ac, or 700 percent of the original baseline. However, unlike the other TDR programs we discuss in this report, we cannot refer to this figure as a density bonus: no building at all is allowed in the receiving area except with TDRs, and thus the density limits are the new limits established for the village with TDRs. The 700 percent figure

simply provides some information about the density increase in the area over what it would have been in the absence of the program.

Table 11.1 provides a summary of the Chesterfield program.

TABLE 11.1

FEATURES OF CHESTERFIELD TOWNSHIP'S TDR PROGRAM

Year established	1998
Land area[1]	14,000 acres
General information	
Purpose is to preserve agricultural lands while still accommodating growth.	
TDR use is "by right."	
Easement is recorded on the entire parcel at the time the sending area landowner enrolls in the TDR program; residual development rights retained at 1 du/50 ac.	
Burlington County Development Credit Bank facilitates the marketing of development credits by using public funds to purchase credits for resale. Bank also may act as a guarantor of commercial farm loans that use the credits as collateral.	
Sending areas	
Agricultural district only[2]	
Land area	7,472 acres
Baseline density limits	1 du/3.3 ac for parcels < 10 acres 1 du/10 ac for parcels ≥ 10 acres
TDR credit allocation per parcel	1.1 [(acres slight soils)/2.7 + (acres moderate soils)/6 + (acres severe soils) /50]
Receiving areas	
Name	Old York Village
Acreage	60 acres
Number of residential units	1,200
Upzoned from 1 du/3.3 ac to an average of 2.14 du/ac	
Must use TDR credits for each unit; number of credits required depends on type of housing (see text for detail).	

1 This is the total township land area.

2 Parcels must be at least 10 acres.

TDR Program Results

As of April 2007, 91 percent of the units proposed for the Old York Village receiving area are occupied, under construction, or in the approval process (Weber 2007). This amounts to approximately 1,095 of the 1,200 total units that ultimately will be built. Of this total, 221 houses are occupied, 583 have been approved and are in various stages of construction, and 291 units are in the planning process awaiting approval. Both multifamily and single-family dwellings are represented. The average selling price for the single-family homes, which have around 2,800–3,500 square feet of interior space and lots about 10,000 square feet, is approximately $450,000. According to Weber (2007), this price is competitive with similar homes in the area that are on much larger lots. However, a search of properties in Chesterfield listed for sale in mid-May 2007 on the realtor.com website turned up only two new single-family homes with prices less than $450,000, of 17 new homes listed. Of the 95 single-family homes for sale, only 20 had more than 2,500 square feet of interior space and were priced less than $450,000.

Based on interviews with township officials and planning consultants in the area, the general perception of the Chesterfield program is that it has been successful. Developers find that the program has a sense of predictability, with little uncertainty in the outcomes. Landowners have willingly sold development rights, and the price has centered on $50,000 for the past couple of years.[89] Because of the extensive planning involved in developing the receiving area, TDR use is by right, and developers know that if they purchase rights, they will be able to use them.

As of early 2007, approximately 3,200 acres of farmland had been preserved in Chesterfield through its TDR program. A total of 4,575 acres of farmland has been preserved through all the land preservation programs in the township—TDR sales as well as state and local conservation programs. Given the sending area acreage total of 7,472 (see Table 11.1), this means that approximately 61 percent of all agricultural land is preserved from development in Chesterfield Township, either because of TDR sales or purchased easements.

Conclusions

The Chesterfield TDR program was designed and implemented with a great deal of up-front planning and analysis. The county and the township estimated the demand for additional development and found a location in which to place all of that development in a master-planned, mixed-use community. Significant effort went into the design and planning of this receiving area. Its location is potentially appealing to people who work in the nearby metropolitan areas. Thus the township achieved its goal of diverting new development from the heart of the agricultural areas while still accommodating growth. The healthy demand for TDRs and the pace of building in the receiving area indicate that the planning has paid off for the community. They also indicate that there is a demand for the density allowed in the development. Whether the type of housing available in Old York Village—that is, the proportion of multifamily to single-family housing, the smaller lots in exchange for community open space, and the mix of residential and commercial uses—is what consumers would demand in a market with several options available is an open question. Some studies have found that households are not willing to trade off private lot space for public open space inside subdivisions (Kopits et al. 2007). In Chesterfield, however, the local government selected this "new urbanist" concept, and the market appears to be work-

ing. It is not apparent that such a highly planned and managed approach to development would work in all communities, but Chesterfield's experience provides some lessons learned for others.

One lingering question about the program is the extent to which there might be latent demand for development in the rural areas outside Old York Village. It appears that the village is satisfying the current demand and that developers prefer building there over attempting to build in a much more limited way in the rest of the township. No water and sewer services are available in the rural areas, for one thing, and the density limits are much more restrictive. There was no downzoning in the rural areas when the TDR program was set up, and as far as we can tell, no explicit restrictions exist to bar development there. However, it would be helpful to know more about why exactly there is virtually no building outside the receiving area.

The lack of downzoning is also interesting from the supply side of the TDR market. Often, downzoning is used to encourage landowners to sell their development rights. In Chesterfield, a healthy market has developed with willing sellers of TDRs without the use of downzoning. This is consistent with results in Calvert County, Maryland (Chapter 3), and should be noted by other communities considering TDRs. The Chesterfield program, like Calvert's, is not as "mandatory" as many others, and yet the township has done a good job of achieving its goals of land preservation and guided, high-density development.

Finally, the Chesterfield program is a good example of a new-generation TDR program. Like the programs in Collier and Sarasota counties in Florida (Chapters 9 and 10), Chesterfield is accommodating growth by basically accepting development in one portion of the jurisdiction that is currently undeveloped. That development is higher-density and more compact, and in exchange for this new building, acres of land are preserved in other rural areas. In Chesterfield, this approach seems to be working. It will be interesting to watch the experiences in other New Jersey communities that might be copying this approach.

CHAPTER 12

King County, Washington: Providing Incentives for Municipalities to Accept Density

King County is in western Washington and includes the city of Seattle. It adopted a three-year pilot TDR program in 1998 and made the program a permanent part of the county code in 2001. The program focuses on protecting rural and "urban separator" lands from encroaching development from the Seattle suburbs. The King County program has unique features that distinguish it from other programs in this report. For one thing, the county has a TDR bank and has relied on it extensively, using county funds to purchase development rights, which are then banked for later sale and use in receiving areas. Another aspect of the program is the county's attempt to set up "interlocal" agreements—arrangements with the municipalities to accept higher-density developments with TDRs. Conflicts between counties and the incorporated areas within their borders are prevalent across the United States and present challenges for TDR programs. The King County experience is thus interesting. We consider the King County program, like the Collier, Sarasota, and Chesterfield programs (Chapters 9, 10, and 11, respectively), to be a new-generation approach that employs new techniques for addressing the receiving area problem. Unlike the other three programs, however, King County is not designating receiving areas on the fringe, but rather trying new tools for getting additional density into municipalities.

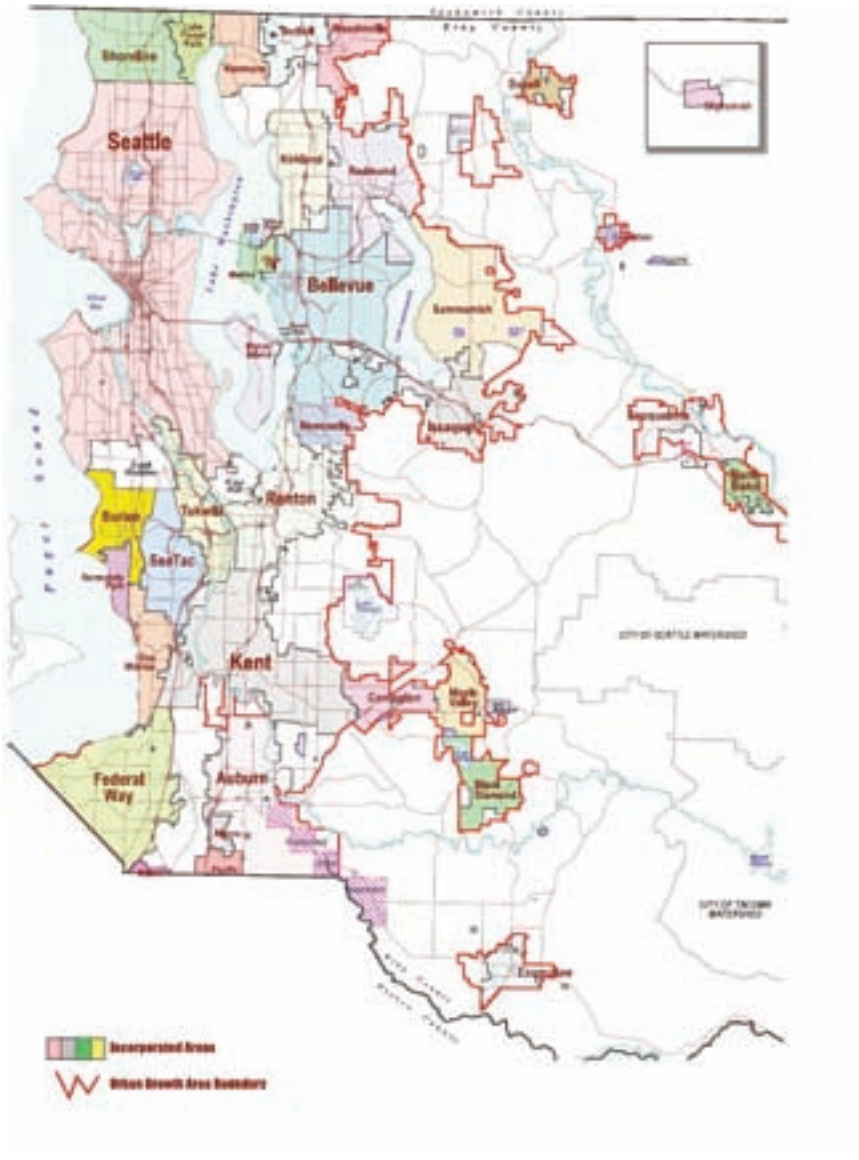
Background on King County[90]

The population of King County in 2005 was estimated at slightly fewer than 1.8 million people, making it by far the largest county in Washington and the 12th-largest county in the United States. There are 39 incorporated areas within the county, ranging from Seattle, which has a population of approximately 600,000, down to Beaux Arts Village and Skykomish, which have fewer than 400 residents each. Figure 12.1 shows the incorporated areas in the county.

The land area of King County is 1.36 million acres, with Seattle accounting for only 53,760 acres. The total unincorporated area of the county makes up 82 percent of the total county land area. Although population density for the county is low, at 817 people per square mile, Seattle is relatively densely developed, with 6,717 people per square mile. In many ways, King County looks similar to Collier County, Florida (Chapter 9), in that it is geographically large with a

FIGURE 12.1

INCORPORATED CITIES IN KING COUNTY, 2004



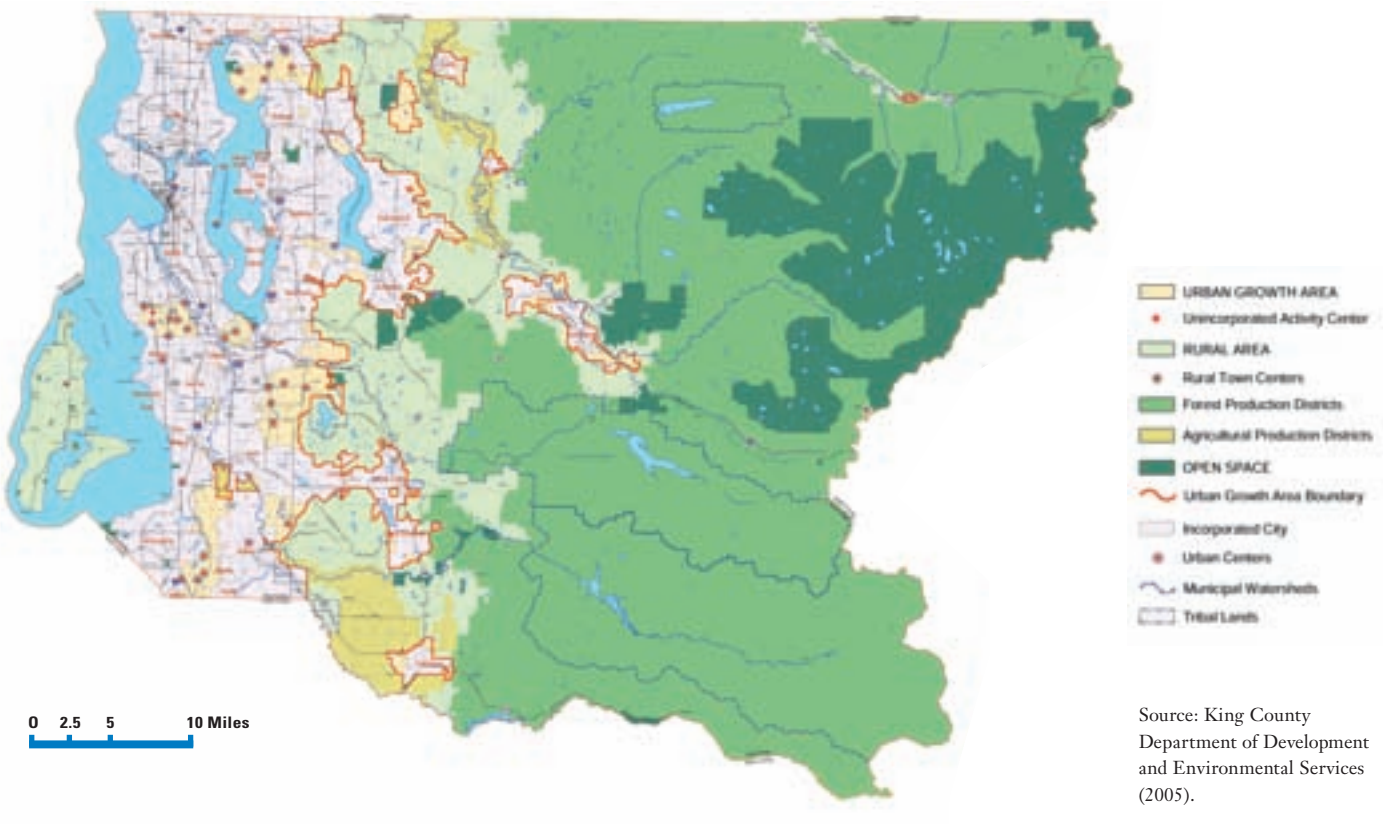
Source: King County Budget Office (2004).

densely developed urban area and vast tracts of undeveloped land. Figure 12.2 shows the striking land use patterns of the county. The far eastern portions are mostly forested, with very little development. The county is geographically diverse with a saltwater coastline, river floodplains, and high mountains; Mount Daniels at the crest of the Cascade Mountains is 8,000 feet high.

King County adopted a comprehensive plan in 1994 that delineated the urban growth area as well as rural and resource areas in the county. It also outlined growth policies for the unincorporated communities. The plan was adopted in response to the state of Washington's 1990 Growth Management Act, which required the designation of urban growth areas to provide limits to city expansion. The Growth Management Act was enacted, in part, in response to popu-

FIGURE 12.2

URBAN GROWTH BOUNDARY AND LAND USE MAP, KING COUNTY



Source: King County Department of Development and Environmental Services (2005).

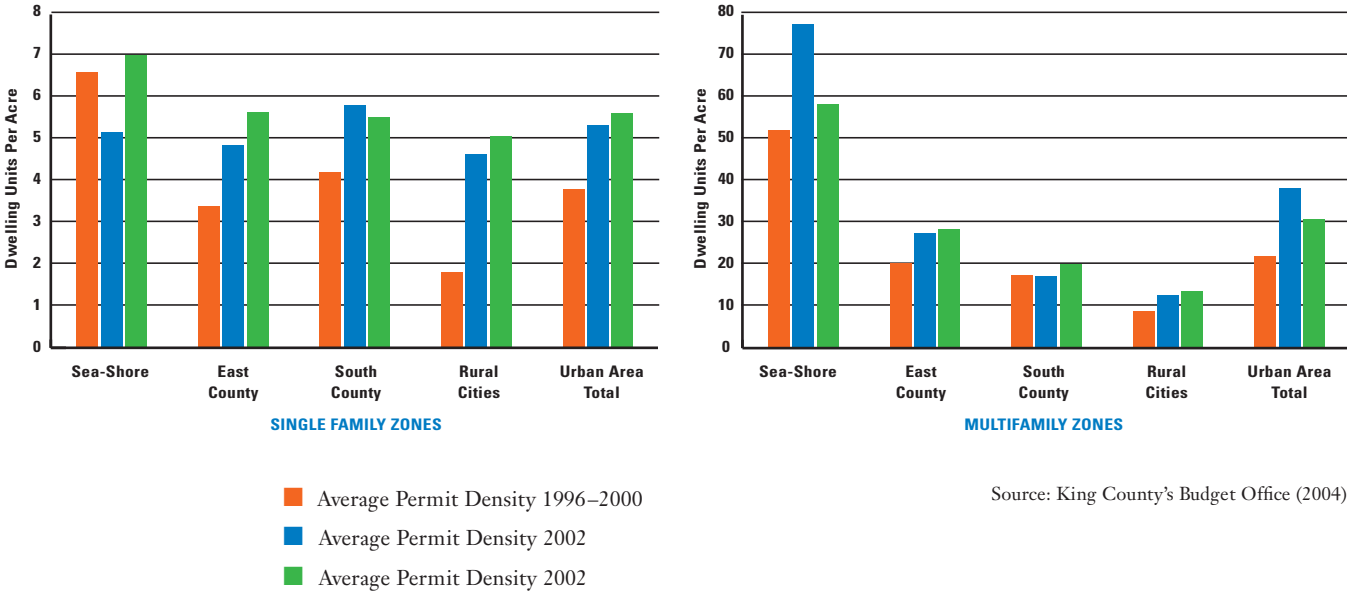
lation growth and land development in rural areas not far from urban centers. In 1994, 47 percent of new residential construction in King County took place outside city limits, and 15 percent of the lots in new subdivisions were in areas designated as rural by the county. The state's Growth Management Act and the county's comprehensive plan increased the number of incorporated areas in the county and, through annexation, the size of those areas. As a result, by 2004, less than 20 percent of new housing units were built in unincorporated areas of the county and only 4 percent of new units were in rural areas. In addition, infill development inside cities increased over that decade. In 2003, the county estimates that 44 percent of new development was redevelopment—that is, building on land that had a preexisting use.

Figure 12.3 shows residential housing densities over different time periods in four areas of the county and for the urban area overall. For the most part, density has been rising across the county in recent years. Average density across all types of housing in urban areas was 5.6 du/ac in 2003 compared with 3.8 du/ac during 1996–2000.

Agriculture is not an important part of the King County economy, but there are some agricultural lands and the county would like to preserve them. In 2002, the county's 41,769 acres of farmland produced primarily vegetables, nursery and greenhouse products, and dairy products. Farms are mostly very small, averaging only 27 acres. The market value of production averaged $77,500 per farm in 2002; the total value in that year placed King County 14th among Wash-

FIGURE 12.3

RESIDENTIAL DENSITY IN KING COUNTY



Source: King County's Budget Office (2004)

ington counties. Most of the undeveloped lands in the county are forestlands. In 2001, a total of 871,000 acres was in forest.

King County has been in a recession since a sharp economic downturn in early 2001. However, things have turned around recently, and overall, the county's economy is relatively strong. It has 40 percent of all jobs in the state, and its median household income, which stood at $53,414 in 2003, is higher than both the Washington and U.S. figures. The median value of owner-occupied housing units in King County in 2000 was $236,900; in Seattle that same year, the figure was $259,600. The median value for Washington as a whole was $168,300.

King County's Program[91]

King County's TDR program is designed to curtail sprawl by denoting "urban separator" areas between the more urbanized western part of the county and the rural, heavily forested east. Urban separators are low-density areas within the urban growth area (see Figure 12.2) that create open-space corridors and "provide a visual contrast to continuous development" (King County 2001). Urban separator lands can be used to preserve environmentally sensitive areas, provide wildlife habitat, and offer recreation in the form of parks and trails. They also help meet the state's Growth Management Act requirements for greenbelts and open space within the county's urban growth area. The county maintains that residential density limits in urban separator areas should be kept no higher than 1 du/ac.

Because urban separators are within the urban growth area, they can be annexed by cities. Officially labeling these lands as urban separators in maps and documents makes cities aware of

these lands as open space when considering annexation. Because annexation is encouraged by the state government—new legislation provides annexing cities a state sales tax credit to identify the timelines for transition to city-based governance—and the rate of annexation in King County has been high in recent years, these issues with urban separator lands are important for the county.

Sending Areas

Sending areas in the King County program are the lands zoned R-1 (1 du/ac) in the urban separator areas, as well as agriculturally zoned lands, rural areas, and forest production districts. Table 12.1 lists the sending zones and the baseline density limits that apply in each. Also shown is the TDR allocation rate. In the King County program, the allocation is expressed in terms of dwelling units per acre that may be transferred from the sending site. In the rural areas' RA-5 and RA-2.5 zones, the allocation rate is the same as baseline density, but in the other zones, including the R-1 urban separator lands, density may be transferred off at a rate greater than the baseline density. Once development rights are sold from a sending area, either the entire parcel or a portion of the parcel has a permanent conservation easement placed on it, barring future development. If the easement is placed on only a portion of the acreage because not all development rights have been sold, the remaining portion of the land can be developed according to the baseline density limits.

Receiving Areas

King County encourages the use of TDRs in urban areas but does allow limited use in some rural areas. Table 12.1 denotes the acceptable receiving areas, which include all residential zones from R-4 (4 du/ac) through R-48 (48 du/ac), some mixed-use zones, and rural areas zoned RA-2.5, which have baseline density limits of 1 du/5 ac. The use of TDRs in the RA-2.5 areas is conditional on several requirements, including the existence of public water service to the receiving property; being within a mile of an existing predominant pattern of lot sizes smaller than 5 acres; showing that the development will have no effect on environmentally sensitive areas; and showing that public services and facilities will not have to be extended because of a new pattern of smaller lots (http://dnr.metrokc.gov/wlr/tdr/receiving.htm). Incorporated areas in the county are also permitted to be receiving areas, and the county is working hard to facilitate such transfers. Officials are working on interlocal agreements whereby the cities will accept additional density in exchange for land preservation in the county-designated sending areas. The agreements may offer compensation for the additional density, and in fact, the county originally had funds available for this purpose. These "amenity funds" were to be used to help cities undertake infrastructure improvements deemed necessary to accommodate the extra density. The funds could be used for acquisition, design, or construction of public art, cultural, or community facilities, as well as parks, open space, trails, roads, parking, landscaping, sidewalks, other streetscape improvements, or transit-related improvements (http://dnr.metrokc.gov/wlr/tdr/bank.htm). A property tax surcharge, to be used for open space acquisition through a program entitled Conservation Futures, provided the funding. Although funding dropped with some budget shortfalls, these funds may be available again in the future.

TABLE 12.1

FEATURES OF KING COUNTY'S TDR PROGRAM

Year established[1]	2001
Land area[2]	1.36 million acres
General information	
Program goal is protection of rural resource lands and prevention of sprawl through use of "urban separator" lands.	
Following transfer of development rights, the portion of the lot not designated as a sending site may accommodate residential dwelling units consistent with baseline zoning; any building on sending sites in areas zoned rural must be clustered.	
Permanent conservation easement on sending site granted to county or other appropriate land management agency required; may be placed on entire lot or portion of the lot.	
The TDR bank operated by county can buy and sell TDRs; will sell only for use in urban areas. It also uses funds for urban amenity improvements in neighborhoods that accept additional density through the TDR program. As of fall 2006, the bank was "full" because of some large purchases (see text) and was not purchasing development rights.	
Sending areas	
Rural resource and urban separator areas[3]	**Baseline density limit** / **TDR allocation rate[4]**
Rural	
Agricultural production district	
A-10	1 du/10 ac / 1 du/5 ac
A-35	1 du/35 ac / 1 du/5 ac
Rural area	
RA-2.5 and RA-5	1 du/5 ac / 1 du/5 ac
RA-10	1 du/10 ac / 1 du/5 ac[5]
Forest production district	1 du/80 ac / 1 du/80 ac[6]
Urban separator	
R-1	1 du/ac / 4 du/ac

1. Pilot program ran for three years prior to 2001.
2. This is the land area of the entire county.
3. Additional sending lands are proposed rural regional trails, resource areas, open-space sites, or land that has been identified as habitat for endangered or threatened species.
4. Allocation rate is expressed in terms of dwelling units per acre that can be transferred to a receiving site. For transfers to an incorporated urban area, allocation rate for sending sites with rural area, agricultural, or forest zoning is twice the number reported here; otherwise, determined by a conversion ratio agreed upon by county and incorporated area.
5. Rate if within "rural forest focus area"; if outside, rate is same as base density, 1 du/10 ac.
6. For properties between 15 and 80 acres, 1 du per lot may be transferred.

Receiving areas		
	Baseline density limit	**Density bonus w/TDRs**
Incorporated cities	Varies	To be negotiated
Unincorporated urban sites		
R-4 to R-48, "neighborhood business," "community business," "regional business," and "office" zones	4 du/ac–48 du/ac	50%[7]
Rural areas[8]		
RA-2.5	1 du/5 ac	100%

7. Density bonus is 33% in community business, regional business, and office zones.
8. To get density bonus in rural zones, the receiving site must meet several conditions. In addition, it can receive TDRs only from sending sites in the rural forest focus area.

TDR Program Results

Since the pilot program began in 1998, 455 TDRs have been sold in 48 private market transactions as of February 2007. Three of those transactions were during the pilot program period, between 1998 and 2001, with the remainder taking place after the permanent program was adopted in 2001. In addition to the private market sales, the TDR bank acquired 1,124 TDRs, 31 of which were sold in 2006 for a residential development in Seattle. According to Sollitto (2007), in mid-March 2007, the sale of 18 more development rights was imminent. Of the 1,124 rights purchased by the bank, 990 were purchased in a single transaction from a timber company that owned land in a forest production district. This transaction preserved more than 90,000 acres of land. The remaining TDR sales have preserved an additional 2,000 acres (Sollitto 2007).

Of the 455 TDRs sold in the private market, more than half were from sending lands in the urban separator (R-1) zone. These TDRs were used on receiving sites in urban unincorporated areas. Most of the rest were from rural areas that were also used in urban unincorporated receiving areas. As can be seen in Table 12.1, these receiving areas have baseline zoning ranging from 4 to 48 du/ac and thus can be relatively high-density zones. The outcomes indicate that there is some demand for additional density in these already developed areas. Only 2 TDRs have been rural-to-rural transfers. This is a contrast to the Calvert and Queen Anne's programs (Chapters 2 and 3) and may be a result of several conditions that King County imposed on the use of TDRs in rural zones.

Three transactions totaling 81 TDRs have transferred density from rural sending sites to urban incorporated areas, two to the city of Seattle and one to the city of Issaquah. These are the only interlocal agreements that the county has arranged thus far. The Issaquah agreement, released in 2000, was used to create 62 large single-family homes (Sollitto 2006). The agreement with Seattle was for the Denny Triangle neighborhood in the city; the TDRs were used in 2004 and 2005 to increase the square footage in commercial developments. According to Sollitto (2006), the county is concentrating its efforts on developing interlocal agreements with municipalities located in the Bellevue-Renton corridor on the east side of Union Lake (see Figure 12.1).

The county has done a careful job of tracking individual TDR sales, including prices. One must be careful comparing prices across transactions, however, because the transactions are not always for the same "product." For example, the TDRs sold in the Issaquah agreement average more than $60,000 apiece and the sale totaled $3.75 million, but this high price is likely due to the special nature of the agreement and the use of the TDRs on the receiving site. Averaging TDR prices over the 33 transactions that transferred density between parcels in the urban separator areas yields an average price of approximately $6,600 per TDR.[92]

Conclusions

The King County TDR program is one item in the county's toolbox to encourage preservation of rural resource and agricultural lands and contain urban sprawl. The program supports containing growth to cities and to the area inside the urban service area, as required by the state Growth Management Act. Its focus is on so-called urban separator lands, areas on the edge of the urban service area, and thus far most of the program activity has involved those properties. Acreage preserved is very high when one includes the 90,000 acres preserved by the county, which banked the associated TDRs. The bank is an important component of the King County program; other communities have not fully explored this option. Excluding the 90,000 acres preserved by the county through its bank, however, leaves the private market responsible for only about 2,000 acres. Private market transactions have been steady but relatively limited in scope; individually, they have not accounted for a large amount of preserved acreage.

It is interesting that almost all transactions have been from rural or urban separator lands to urban areas, both incorporated and unincorporated, and not to other rural lands. This is a contrast to many other programs that allow rural-to-rural transfers. King County has had success in encouraging the use of TDRs in the more urbanized areas of the county.

The county's attempts to develop interlocal agreements with the incorporated areas of the county have not met with a great deal of success, but a few have been arranged, and the county is working hard in this regard. It will be interesting to watch developments in the future, as tensions between counties and municipalities over land use resonate in many parts of the United States (see DeHart and Etgen 2007).

King County's approach to receiving areas contrasts with that of Collier, Sarasota, and Chesterfield (Chapters 9, 10, and 11, respectively). Instead of looking for a new receiving area away from current residents, as those counties have done, King County is trying to find ways to get residents to accept additional density. The interlocal agreements are one example; another is the use of "amenity funds"—a form of compensation to municipalities for accepting additional density. It will be worth revisiting the King County program in the future as landowners, developers, and the local government gain experience in using it.

CHAPTER 13

Conclusions

In this report, we have documented the experiences with transferable development rights in 10 communities across the United States. The programs have focused on preserving farmland, environmentally sensitive lands, and open space. Their designs differ greatly, as do the results. In this concluding chapter, we summarize some of the strengths and weaknesses of TDRs, provide some thoughts about the elements of a successful TDR program, and identify common pitfalls that communities should try to avoid.

TDRs have much to recommend them. From a local government's perspective, they have three main benefits. First, land is preserved without expenditure of government money. We estimate that preserving the 48,000 acres of land in Montgomery County, Maryland (Chapter 4), that were protected through the TDR program would have cost the county approximately $68 million if done through purchase of development rights. Most communities do not have the resources to preserve the amount of land they would like to preserve through a PDR or land purchase program; thus TDRs provide an attractive alternative. Second, TDRs can at least partially compensate landowners for the loss in land value that results from downzoning. Landowners whose properties may be downzoned usually oppose such a change, but the availability of TDRs might influence their resolve to fight it. Third, TDRs accommodate growth in a community. In contrast to downzoning or a PDR program, TDRs shift development to different locations but do not necessarily reduce it. For most communities trying to ensure jobs and a good standard of living for their citizens, allowing some growth is a good thing. And if local areas do not take their share of any growth in the larger metropolitan area, that growth will occur farther out and sprawl will result.

TDRs have some other benefits as well. From a pure social welfare perspective, they can be an improvement on the status quo. Because they are private market, voluntary programs, when parties participate and engage in the buying and selling of development rights, they must be making themselves better off than they were in the absence of the program. These voluntary trades are an indication that the program is welfare-improving for the community. Particularly in contrast to the more "command-and-control" approach embodied in zoning density limits, TDRs provide flexibility in land uses that can benefit everyone. In addition, if permanent protection of certain lands in a community is part of the social welfare equation—that is, everyone benefits from the preserved open space—a well-functioning TDR program accomplishes this objective.

The critical adjective here, though, is well-functioning. There are many TDR programs on the books in communities that are not being used by local developers and landowners. All of the programs we reviewed in this report have had some activity but many have not met expectations. Moreover, it is probably fair to say that even the ones with significant accomplishments have had their share of problems.

For any TDR program to achieve its goals, the market for development rights must work: there must be a healthy supply of and demand for development rights, interested parties must be able to meet in the TDR "marketplace," and trades must be made at some mutually agreed-upon price. Once this private market transaction is acceptable to both parties, it is essential that the local government readily approve the transaction if it meets the requirements laid out in the TDR ordinance.

In our view, the most persistent problems lie on the demand side of the TDR market. In many programs, demand from developers for additional density in the designated receiving areas is insufficient. This lack of demand can be due to several factors. First, in many communities, trying to force additional density into relatively high-density, already developed receiving areas is very difficult; almost no program has been successful in this regard, and some of the biggest failures seem to be attributable to this hurdle. In some cases, current residents put up resistance; in others, the demand for higher-density housing is lacking—or at least so it seems to developers. It could be that existing zoning rules tend to be set at roughly the density that the housing market will bear and what current residents expect. If this is the case, there is only limited possibility for higher density in receiving areas with TDRs, unless there is some type of downzoning.

Of the programs that we analyzed, Queen Anne's County, Maryland (Chapter 7), provides the strongest evidence of this type of problem. When receiving areas were limited to the county's designated growth areas, which include town centers and residential areas with baseline density limits of around 3 dwelling units per acre, TDR sales dropped to virtually zero. An alternative density transfer program in the county that continued to allow rural-to-rural transfers then became more active, indicating a demand for additional density in the rural areas. Malibu, California (Chapter 8), is another example. After the city incorporated, it refused to accept additional density in the city in order to protect the nearby hillsides in the Santa Monica Mountains. No TDRs have been used since the city incorporated.

A second problem on the demand side has to do with the allowance of "free" density in the community. If developers are allowed to build beyond baseline density limits using means other than TDRs—for example, if they agree to connect to public water and sewer, build "planned unit developments," or cluster housing on a portion of the total parcel acreage—then they have little incentive to incur the costs of purchasing TDRs to get that extra density. This reduces TDR sales and the amount of land preserved through the program. We saw strong evidence of this problem in St. Mary's County, Maryland (Chapter 5).

Local governments that set burdensome additional restrictions and requirements on developers using TDRs are a third reason why the demand for TDRs is limited in many programs. One of these requirements is the need for rezoning or county commissioners' approval of individual TDR transactions. This kind of requirement can add a great deal of uncertainty to the process and cause developers to shy away from using TDRs. A stronger demand exists when TDR use is "by right"—when the additional density in receiving areas is approved in the normal subdivision approval process in the county planning department, as long as all TDR program require-

ments are met. Some programs also layer additional land use requirements on developers. In the Montgomery County, Maryland, program, developers must use two-thirds of the total allowable TDRs on the site; that is, they must achieve at least two-thirds of the maximum density unless they apply for an exemption because of environmental or other conditions. These kinds of requirements can discourage TDR use and also add to the costs of the program.

In general, fewer problems exist on the supply side of the TDR market. However, the design of some programs has led to problems. In the same way that extra restrictions and requirements on developers can dampen demand, additional hurdles for landowners can limit supply. We found this to be a problem in Charles County, Maryland (Chapter 6). To sell TDRs, landowners need to meet all the requirements of the state PDR program, the Maryland Agricultural Land Preservation Fund. These criteria were so strict that very few properties qualified, and for those that did, most owners could earn higher prices and have a more certain outcome by simply selling an easement to MALPF.

Another problem occurs when the sending areas have relatively high baseline density, as in Charles County, where rural areas are zoned for one house on 3 acres and the potential development value of those parcels can be high. This discourages landowners from selling TDRs. This is not to suggest that downzoning sending lands is a prerequisite for a successful TDR program. The Calvert County, Maryland, program (Chapter 3) provides strong evidence that the market can work and lands be preserved without downzoning. However, the Calvert program has allowed relatively free trading across geographical areas and zoning districts—in particular, allowing TDRs to be used to increase density in rural subdivisions.

A final problem on the supply side arises if information about TDR prices is not readily available or if it is difficult for landowners to find buyers. In addition, prices that fluctuate a great deal across individual sales and over time can discourage landowners from participating or lead them to hold their TDRs, waiting for higher prices. Some programs—Montgomery County's is one—have had fluctuating prices over time, mainly because of problems on the demand side of the market. In addition, to work well, a TDR program should be designed such that for some properties, the sale of TDRs will be enough to compensate the landowner for the lost development opportunities on the property.

Communities have tried innovative approaches to TDRs to overcome some of those problems and make their TDR programs work. The new-generation TDR programs such as Collier and Sarasota counties in Florida (Chapters 9 and 10, respectively), Chesterfield Township, New Jersey (Chapter 11), and King County, Washington (Chapter 12), have designed their programs to circumvent some of the receiving area problems. Collier, Sarasota, and Chesterfield have all decided to move receiving areas away from established residential areas and urban centers. Developers in Chesterfield are building a new, compact, mixed-use development on the edge of the township, near the New Jersey Turnpike, and requiring that all development in the new community use TDRs. Collier and Sarasota designated sending and receiving areas on the urban-rural fringe in an attempt to protect some of this land from future development while encouraging other areas there to be developed more densely. King County is working on interlocal agreements to get municipalities to accept additional density for lands preserved outside their borders. The county also compensates municipalities for accepting extra density from TDRs.

Some communities have considered trying to increase TDR demand by downzoning receiving areas and then allowing developers to buy back the density through TDRs. Although this ap-

proach may have potential in some areas, it could backfire. By making development more costly, it may simply lead developers to build without TDRs at the newer, lower-density limits. Or it might encourage developers to build in the more rural sending areas, since it makes the relative value of developing in the sending and receiving areas more similar. The approach taken by Calvert County, Maryland, to downzone *all* areas of the county, sending and receiving zones alike, may be preferred. Not only does it have an aspect of fairness that could appeal to landowners, but since it alters the value of development in all locations, it is less likely to shift developers to rural sending areas. Calvert has seen an increase in TDR demand since the recent downzonings and an increase in TDR use in and near town centers.

Some other features are important for a successful program. Because a community's TDR program is so closely tied to its zoning rules and land market conditions, an understanding of land values and the development potential in different regions is essential for designing an effective program. New Jersey requires that communities considering TDRs first conduct a full "build-out" analysis and forecast of future growth and land use patterns. Such analyses give communities a good baseline from which to work and a better chance of setting up a smart TDR program that will actually function and achieve the land preservation objectives. In New Jersey, the state provides grants to communities to undertake these analyses; we believe that other states should consider this option.

A consistent theme of the TDR programs that have worked well is active oversight of the TDR market by local government. Since the TDR market is created to change the incentives to preserve land in some areas and make it more densely developed in others, the government needs to monitor this market to ensure that it is working. It can facilitate the market by smoothing possible swings in price that might arise from housing market cycles by, for example, purchasing TDRs directly when prices are low, as in Calvert County.

Another local government role is to collect data from the program, maintain complete and accurate records of individual TDR transactions, and monitor the results of the program. Among the communities we analyzed here, Calvert County has kept detailed records of all transactions, which allowed us to conduct analyses of the workings of the TDR market and the patterns of land use in the county. King County, Washington, also is keeping detailed records of individual transactions, which are available to the public. In contrast, data on the Montgomery County program, including prices, are not available. Communities need to monitor the program so that they can continually evaluate how well it is working and adjust it when necessary; a first step is record-keeping.

Finally, TDRs cannot be expected to achieve all of a community's land use goals. TDRs work best when they are used in conjunction with other policies, such as PDRs, land purchase programs for public open space, and zoning. TDRs can help attain land preservation goals at little public cost, but they cannot be used to preserve particular properties or to achieve spatial patterns of preservation that a community may consider important. They also retain land in private ownership and are thus not a substitute for public lands such as parks and recreation areas. Communities should consider a well-designed and implemented TDR program as one tool in their land conservation kits.

■ ■ ■

NOTES

1. Oftentimes, minimum lot sizes are established in addition to the density limits. For commercial buildings, limits are usually placed on floor area as a percentage of the land area.
2. Indeed, some amount of development must be allowed or a property owner may be able to argue that a regulation constitutes a "takings" case.
3. We focus our attention on residential programs in which TDRs are used to increase the number of dwelling units per acre in receiving areas. A few programs allow TDRs to be used for commercial development, and in theory, TDRs could be used for a host of other kinds of development, but we limit the scope of our report to housing.
4. Some studies by economists have referred to a system of this type as "marketable development rights." See, for example, Thorsnes and Simon (1999) and Mills (1980).
5. In the planning literature, programs in which sending area downzoning occurs are often referred to as "mandatory" TDR programs, and programs without downzoning, "voluntary" programs (see Johnston and Madison 1997, for example). We avoid this terminology here because all TDR programs are inherently voluntary: private landowners choose whether to sell their development rights and preserve their land.
6. Planners sometimes look at the transfer ratio in TDR programs—that is, the ratio of the number of TDRs allocated per acre to the allowable density (dwelling units per acre) in a sending area. In our example, the transfer ratio would be 2:1. That is, the landowner can sell 20 TDRs per 100 acres and develop only to 10 houses per 100 acres.
7. These figures are from the Maryland State Department of Assessments and Taxation, which uses a fiscal year of July 1–June 30.
8. These figures are from Maryland Property View data and are actual sales prices, not assessed values, for single-family dwellings sold in the year 2001 in those two town centers.
9. This program required farmers to permanently cease production of tobacco but to remain in agriculture for at least 10 years.
10. Additional acreage in forestry is also protected.
11. In the most recent rezoning, in May 2006, these areas were changed to the farm and forestry district.
12. Properties can show that they are active in farming or forestry by registering a farm or forest management plan at the time they apply to be an APD. The 50-acre minimum is not required if the farm is located next to an already preserved farm.
13. Some adjustments are made for residences currently located on the property, grandfathered lots, and environmentally sensitive areas.
14. The LAR program, in which landowners who sell their development rights to the county receive tax-free interest payments over a 15-year period and are paid the principal at the end of the 15 years, began in 2001. See American Farmland Trust (1999) for more on "installment purchase agreements" like the LAR program.
15. Annual TDR sales and acres preserved in each year are not the same because when a property enters the TDR program and sells even 1 TDR, the entire property is permanently preserved.

The remaining TDRs may then be sold over time as the owner chooses.

16. Bowen reported that the county is offering $9,000 through its PAR program.
17. U.S. Census Bureau (http://quickfacts.census.gov/qfd/states/24/24031.html).
18. For detail on the planning process and changes over time, see Harrigan and Hoffman (2002).
19. County-level subdivision data from MNPPC, planning office.
20. See the county master plan map (http://www.mc-mncppc.org/gis/large_maps/index.shtm).
21. See study by Akundi (2006). Also see Montgomery County Soil Conservation District (2001).
22. Small farms have less than $2,500 in sales per year. Small farms in this category account for about 40 percent of all farms in the county as of 2002.
23. Department of Economic Development, Agricultural Statistics.
24. At the time, some people advocated for going to 1 du/50 ac.
25. See Grant Dehart and Rob Etgen (2007) for details of the process for TDR review and the easement rules.
26. To get this rough estimate, we take the total number of acres preserved to date, 45,000 divided by 5 to get the number of TDRs sold, or 9,000. We then multiply by the average price of $7,000.
27. Based on conversations with staff at the Department of Planning, MNCPPC.
28. The goal of the original downzoning of the RDT area was to preserve a farm community in the region (Montgomery County Park and Planning Commission 1980).
29. Based on discussions with staff at the Agricultural Services Department of the county government.
30. A separate TDR market that allows these "super TDRs" to be used in a particular designated area of the RDT is one suggestion. Another is for the government to purchase the easements directly and then sell them for added density in commercial projects where there is demand for additional square footage beyond current zoning levels (based on conversations with MNCPPC, spring 2006).
31. The Fairland planning area has subsequently reduced the number of TDR areas because the expected land use density of several transportation corridors did not emerge as expected (from conversation with Fairland planning staff).
32. We find from the data, however, that the two-thirds rule is not always followed. Because of environmental exceptions or grandfather zoning allowances, on average, developers used about 34 percent of the maximum TDRs that would have been allowed in the master plans.
33. A commission was appointed in 1999 to study the issues and suggest solutions.
34. In 1984, Maryland passed the Chesapeake Bay Critical Area Act, which designated all lands within 1,000 feet of tidal waters or adjacent tidal wetlands as critical area. The state law requires that local jurisdictions develop and adopt their own critical area programs based on the state criteria. These criteria include distinguishing three classifications of lands based on land uses in place in December 1985; different zoning density limits exist for these classifications. For more information on the program, see Critical Area Commission for the Chesapeake and Atlantic Coastal Bays (http://www.dnr.state.md.us/criticalarea/).
35. These calculations were made with subdivision data provided by officials in St. Mary's County Department of Land Use and Growth Management in October 2006.
36. These figures are from the Maryland State Department of Assessments and Taxation, which uses a fiscal year of July 1–June 30.
37. These figures are as of August 11, 2004, and are from St. Mary's County (2005).
38. The 20 percent figure is obtained by dividing the 2005 preserved land figure by the 2002 farmland acreage figure from the Census for Agriculture; thus it is an approximation for 2005.
39. As we explain in Chapter 3, Calvert's density limits have gotten more restrictive in recent years. As recently as 1998, the rural zones were all 1 du/5 ac; in 1999, a countywide downzoning reduced baseline density to 1 du/10 ac, and an-

other downzoning in 2003 reduced it further to 1 du/20 ac.

40. Although development is restricted at the time that the TDRs are first lifted from the sending property, it is not until the final instrument or deed of transfer is recorded that the easement is placed on the property. Until this happens, it is possible for the TDRs to be returned to the sending property, and development under the baseline zoning can take place after that occurs.
41. St. Mary's requires clustering of all subdivisions in the rural preservation district, however.
42. The floor area ratio is expressed as a percentage of the lot size. Therefore, a limit of 0.40 means that the floor area of a building can be no more than 40 percent of the size of the lot.
43. At that time, there were 21 development projects pending in the county that would require the use of TDRs to meet their density goals, 10 projects in the growth areas and 11 in the rural preservation district.
44. This same document reports that other land preservation programs in St. Mary's County, including the Maryland Agricultural Lands Preservation Foundation, Rural Legacy, and donated easements held by various land trusts, have preserved 11,867 acres (St. Mary's County 2005).
45. The text of the proposed ordinance and accompanying documents are available from St. Mary's County Department of Land Use and Growth Management (2006).
46. One TDR would be deducted for each existing dwelling unit on the property.
47. As of 1990, PUDs could not be used in the rural areas (see discussion above).
48. The file provided by the county includes all subdivisions that submitted a preliminary plan to the county.
49. Average density can be calculated in different ways. See McConnell and Walls (2006) for a discussion of the various approaches.
50. Established by the county's Agricultural Land Preservation Board.
51. Until the last few years, the requirements for the MALPF program were even stricter: a property had to be at least 100 acres, and very few forested farms were eligible.
52. From conversation with Charles Rice, Agricultural Land Use Planner, Charles County.
53. From Charles County Land Preservation, Parks, and Recreation Plan (2006).
54. Net farm income from sales of agricultural products in Charles County was about $200 a year in 2002 (NASS 2002). One estimate of the farmland value is about $1,500 (ACDS and ERM 2005).
55. Environmental constraints or state regulations such as forest conservation could limit density, however.
56. Based on conversations with staff at the Department of Planning for Charles County.
57. These figures are from Rossing et al. (2005).
58. The Critical Area TDR program came later.
59. The top housing value category in U.S. Census data is $1,000,000 and above; since more than half of the owner-occupied housing units in the city were in this category in 2000, the statistics suggest that there were probably many houses in Malibu that were worth more than $1 million in 2000.
60. Our description of the Santa Monica Mountains program relies heavily on the excellent summary in Pruetz (2003). Additional information was provided by Hart (2006).
61. Note that this is similar to the situation that took place in Collier County, Florida (Chapter 9), where the state determined that the county was not doing enough to meet the goals of its comprehensive plan—particularly preservation of sensitive habitat areas. The state took over and changed the zoning in a particular area of the county until the county could develop an acceptable plan on its own.
62. City of Malibu Local Implementation Plan, 7–8.2.(D).1(a).
63. See Local Implementation Plan 7–8.2.(D).1(b)–(c). These provisions are consistent with the rules in the older program.
64. Local Implementation Plan 7–8.1.
65. Local Implementation Plan 7–8.3. Merging was required in the earlier program as well. The rationale is apparently to reduce the likelihood that donor lots will be abandoned.

66. These figures are reported on the county website (http://www.enaplesflorida.com/Market/CommunityProfiles.asp). The inland district includes the town of Immokalee and the rural estates. Average per capita income for the county in that same year was $31,200.

67. This is a simple average, unweighted by the number of units or acres. PUD densities range from 0.5 to 23.4 du/ac (based on spreadsheet information provided by Collier County Planning Department). In general, the larger developments tend to have higher densities. Some PUDs in the county are built-out, but others are only partially built; densities listed are for the planned (built-out) development.

68. Acreage information is available from Florida Department of Environmental Protection, Rookery Bay National Estuarine Research Reserve (2002), and from http://www.florida-everglades.com/mapfaka.htm. This acreage does not include the Corkscrew Swamp Sanctuary, which is owned and managed by the Audubon Society; the sanctuary itself is 2,880 acres, and protected land to the south, also owned by Audubon, is an additional 2,640 acres (Buchheister 2006).

69. Marco Island has since been incorporated and thus does not participate in the county's program.

70. This is another program feature that changed over time. Originally, 0.5 TDR/ac could be transferred from a sending site (Pruetz 2003).

71. Information in this section is primarily from personal communication with officials in the Collier County Community Development and Environmental Services, Comprehensive Planning Department (see Weeks et al. 2006). Information also available on the department website (http://www.co.collier.fl.us/compplanning/index.htm), and from the Collier County Land Development Code, available at the Collier County Zoning and Land Development Review website (http://colliergov.net/Index.aspx?page=128). Sections 2.03.07, 2.03.08, 2.2.27, 2.6.39.4, and 2.6.39.5 of the Land Development Code address TDRs.

72. Florida is attempting to preserve some of this land. As part of the Everglades Restoration Project, the state has purchased land in part of the South Golden Gate Estates and the Belle Meade areas (see Figure 9.2).

73. Lands designated by Florida as "areas of critical state concern" also receive higher index values.

74. Affordable housing is one exception.

75. Information in this paragraph is from U.S. Census Bureau (2007).

76. See Hutchinson (2005a, 2005b) for interesting articles about the Myakka River, its designation as a wild and scenic river, and the effects of the city of North Port on water quality in the river.

77. Other counties included in the southwestern Florida planning region are Charlotte, Glades, Hendry, and Lee.

78. Information in this section is from U.S. Census Bureau (2007).

79. All agricultural statistics are from U.S. Department of Agriculture (2002).

80. The 2050 area was delineated based on an extensive environmental assessment report that designated lands to fall into the Environmentally Sensitive Lands Priority Protection Program. These lands are targets for the county's PDR program, which is quite active and is funded by sales tax. The PDR program has a preservation goal of 11,000 acres. Although the PDR program focuses on the 2050 area, it can also be used to buy land in the urban service area for parks and to preserve open space on the urban edge.

81. In a few areas, density limits may be as high as 1 du/ac if subdivisions had already been platted out, but there are very few of these cases.

82 Information in this section comes from U.S. Census Bureau (2007), the U.S. Department of Agriculture (2002), and the Chesterfield Township website on its smart growth efforts (http://www.chesterfieldtwp.com/Smart%20Growth/Smart%20Growth.htm).

83. In New Jersey, townships, not counties, take primary responsibility for land use planning and zoning. They also collect property taxes and provide services such as road maintenance, water and sewer service, schools, and fire protection, responsibilities often assumed by county-level governments in other states.

84. See Johnston and Madison (1997), Machemer and Kaplowitz (2002), and New Jersey Pinelands Commission (2006) for discussions and evaluations of the Pinelands program.

85. The Pinelands cover part of southern Burlington County but not the area including Chesterfield or Lumberton.

86. According to Mercer (2006), the expense of conducting these analyses averages about $250,000.

87. As mentioned above, the formula is based on determining the number of dwelling units that could be built on a property assuming the use of septic tanks; the 1.1 factor is considered a 10 percent bonus factor to provide an incentive to transfer the units rather than build on the property (see Chesterfield Township Code, Article XVII, 130–129).

88. A 10,000-square-foot lot is approximately a quarter-acre.

89. Prices were below $30,000 until the township held an auction on July 21, 2004. Prices at the auction went to $50,000 and have remained in that neighborhood since.

90. Demographic, economic, and land use information in this section is from U.S. Census Bureau (2007), the U.S. Department of Agriculture (2002), Census of Agriculture, and King County's 2004 Annual Growth Report; see King County Budget Office (2004).

91. Information in this section is from Sollitto (2006) and information provided by the King County TDR website (http://dnr.metrokc.gov/wlr/tdr/, and King County Code, available at http://www.metrokc.gov/mkcc/Code/).

92. These calculations are based on TDR sales summary information provided by the TDR program director, Mark Sollitto.

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