



Transferable development rights programs: An economic framework for success

Kent D. Messer

Kent D. Messer, Ph.D.

Assistant Professor
226 Townsend Hall
Dept. of Food & Resource Economics
University of Delaware
Newark, DE 19716
Phone: (302) 831-1316
Fax: (302) 831-6243

ABSTRACT: The inviting promise of transferable development rights programs redirecting money from developers to conservation projects has largely been unfulfilled. This paper summarizes the basic foundations of these programs and outlines an economic framework from which clear suggestions for improvement arise. This framework suggests that for a transferable development rights program to be successful, sufficient demand for development rights needs to be stimulated, opportunities for developers to circumvent the market by seeking variances and zoning changes need to be limited, and an efficient and transparent market structure needs to be established.

Keywords: transferable development rights, tradable permits

INTRODUCTION

In 1980s and 1990s, proponents in the conservation community heralded the potential ecological and economic wonders that could be generated by Transfer of Development Rights (TDR) programs. They argued that establishment of these programs would lead the permanent protection of lands deemed to be ecologically-sensitive or historically significant and the simultaneous stimulation of economic growth, particularly the revitalization of urban centers. Despite this optimism of generating money for conservation from the private sector

“out of thin air”, the limited success of TDR programs in the United States suggests that these programs have generally failed to live up to initial hopes. While TDR programs have preserved over 225,000 acres, most of these acres have been conserved by a handful of TDR programs. Unfortunately, success with TDR programs has not been widespread. As can be seen in Table 1, pages 48 — 50, only 33% of the 60 total TDR programs in the United States had preserved more than 300 acres and 47% of these programs had either been revoked or managed to protect no acres. Despite this general lack of success, this research finds that abandonment of the

TABLE 1 Examples of TDR Programs, Starting Year, and Acres Preserved

LOCATION State, County, Township/City	Year Initiated	Mandatory Participation	Acres Protected
California			
Marin County	1981	No	670
San Mateo County	1986	No	40
San Luis Obispo County	1996	No	0
Colorado^a			
Boulder County	1981	No	3,200
Florida			
Collier County	1974	No	700
Hillsborough County ^a	1985	No	0
Palm Beach County ^a	1992	No	6,573
Idaho^a			
Fremont County	1991	No	200
Maine^a			
Cape Elizabeth	1982	No	0
Maryland			
Calvert County	1978	No	11,652
Caroline County ^c	1989	Yes	345
Cecil County ^c	2006	No	NA
Charles County ^c	1992	No	2,028
Harford County ^a	1992	No	NA
Howard County ^a	1992	No	1,350
Montgomery County ^c	1980	Yes	48,584
Queen Anne's County ^c	1987	No	2,644
St. Mary's County ^c	1990	No	1800
Talbot County ^c	1989	No	770
Massachusetts^a			
Groton	1980	No	292
Hadley	2000	No	0
Sunderland	1974	No	NA
Townsend	1989	No	0

TABLE 1 Examples of TDR Programs, Starting Year, and Acres Preserved (continued)

LOCATION State, County, Township/City	Year Initiated	Mandatory Participation	Acres Protected
Minnesota^a			
Blue Earth County	1977	No	3,000
Montana^a			
Gallatin County	1981	No	670
Springhill Community	1992	Yes	200
New Jersey			
Burlington County ^c			
Chesterfield Township	1975	No	3,710
Lumberton Township	1996	No	850
Somerset County ^a			
Hillsborough Township	1975	No	0
New Jersey Pinelands ^a	1981	Yes	44,000
New York^a			
Eden	1977	No	38
Perinton	1993	No	82
Central Pine Barrens Long Island	1995	Yes	307
Southampton	1972	No	232
Pennsylvania^a			
Bucks County			
Buckingham Township	1975	No	280
Warrington Township	1985	No	0
Berks County			
Washington Township	1994	No	0
Chester County			
Birmingham Township	1978	No	0
East Nantmeal Township	1994	No	0
London Grove Township	1995	No	0
Lancaster County			
Manheim Township	1991	No	Revoked

TABLE 1 Examples of TDR Programs, Starting Year, and Acres Preserved (continued)

LOCATION State, County, Township/City	Year Initiated	Mandatory Participation	Acres Protected
<i>Pennsylvania (continued)</i>			
York County			
Chanceford Township	1979	No	0
Codorus Township	1990	No	Revoked
East Hopewell Township	1984	No	NA
Hopewell Township	1988	No	NA
Lower Chanceford Township	1990	No	200
Shrewsbury Township	1991	No	100
Springfield Township	1996	No	0
<i>Utah^a</i>			
Tooele	1995	No	0
<i>Vermont^a</i>			
Jericho	1992	Yes	0
South Burlington	1992	Yes	250
Williston	1990	No	NA
<i>Virginia^a</i>			
Blacksburg	1996	No	23
<i>Washington</i>			
Black Diamond	2003	No	NA
Island County ^a	1984	No	Revoked
Issaquah Basin	2005	No	0
Thurston County ^a	1995	Yes	0
King County ^c	1993	No	91,000
Snohomish County	2005	No	71
Redmond ^d	1995	No	350

^aAmerican Farmland Trust, 2001.^bBledsoe et al., 1998.^cDehart and Etgen, 2007.^dCascade Land Conservancy, 2007.

TDR approach is not warranted. This paper seeks to outline an economic framework from which to consider the successes and failures of TDR programs and offers clear suggestions on how the design of TDR programs can be improved to yield future conservation benefits.

TDR programs have been used for a variety of goals, including protection of farmland, conservation of environmentally sensitive areas, sprawl prevention, preservation of historic landmarks, development of compact urban areas, and the promotion of downtown commercial growth. Interest in TDR programs is not a recent development. New York City is credited with the first TDR legislated in 1916, which allowed the transfer of unused air rights to other lots (Johnston and Madison). Despite this early use, it was not until the 1970s that TDR programs became widely adopted. Ten programs were established in the 1970s, 16 were established in the 1980s, 29 programs were established in the 1990s, and 3 more programs have been established in the 2000s.

The key conservation advantage to a TDR program is its financial engine. These programs provide a legal framework that can create beneficial situations where the economic pressures for development are directly tapped to provide monetary support to efforts to protect areas of conservation value. Ideally, the government just sets up the framework for the TDR program and the money for conservation comes from the developers (and ultimately the future homeowners or consumers of the good produced at these projects). These programs work through the transference of potential development rights from one piece of property in the “sending” area to another piece of property in the “receiving” area. Once the development rights are transferred, the sending area loses its rights to develop and the land is permanently preserved. The receiving areas (the areas targeted for development) are often designated by the government to have special tax incentives to encourage development or are within designated growth boundaries.

TDR programs can also offset concerns about the environmental impact of development as the money for conservation can be viewed as a reasonable

environmental re-payment for the large public investment into expensive infrastructure that often accompanies for-profit development. Furthermore, they allow landowners in the sending areas to retain land ownership while also protecting their land from development. This private ownership can be politically advantageous when dealing with working landscapes, such as agricultural and forested lands.

This paper examines several economic issues related to TDR programs. First, this paper highlights the similarities between TDR programs and tradable permit systems that have become increasingly popular market-based approaches to environmental issues. Then it outlines the economic framework necessary for a successful TDR program: (i) a ready supply of development rights, (ii) a significant demand for the development rights, and (iii) a transparent and low transaction-cost market structure. Examples of successful and unsuccessful TDR programs will be provided throughout this discussion, however, to learn more of the operational details of these programs, see, for example, Dehart and Etgen (2007), Bredin (2000), and Bledsoe et al. (1998). Finally, the paper discusses the ecological and development impact of TDR programs and offers concluding suggestions on how to improve the conditions necessary to make these programs successful tools for conservation.

TDR Programs as a Marketable Permit System

At its most basic level, TDR programs are the conservation community’s attempt to adapt market-based tradable permit systems to the context of land conservation. Most of the environmental examples of tradable permit systems arise from air pollution reduction. The most famous example is the federal sulfur dioxide (SO₂) pollution program enacted as an amendment to the 1990 Clean Air Act. As of 2000, the SO₂ program had reduced sulfur dioxide pollution by 50% and the EPA estimated the value of the benefits at \$110 billion. Best yet, the program’s annual cost of \$1 billion per year has been dramatically lower than the original \$10 billion per year estimate – approximately half of the lowest

economic cost estimates prior to the start of the program. Additionally, a variety of other tradable permit systems have been developed, such as the tradable permit system in Telluride, Colorado, which seeks to reduce air pollution by issuing tradable permits for fireplaces.

Tradable permit systems work by first establishing an overall goal for reducing the undesirable activity. Next, the government assigns a limited number of permits (or rights) to entities currently involved in the undesirable activity so to achieve the established goal. Finally, a market is established and firms are allowed to trade these permits. In the context of land conservation, the undesirable activity is development in areas identified for conservation value, and the government's goal is to cap the number of development rights and then to allow trade.

Supply of Development Rights

In order for a TDR program to be successful, ideally, there would be a large market for the development rights, including many buyers and many sellers, all with a sufficient amount of information regarding the prices and opportunities available to them. In general, achieving a sufficient supply of potential sellers has been the easiest task for TDR programs to achieve. In fact, economic theory suggests that, with proper financial incentives, an ample supply of tradable development rights will be available for sale until all of the available rights are exhausted.

Due to the economic advantages that can arise to landowners in the sending zones when the price is sufficiently high, most TDR programs on the supply side have been voluntary. A voluntary program retains the original zoning in the sending area, but allows for the transfer of the development rights in the sending area to the receiving area. The voluntary system has the advantage of avoiding "takings" challenges, where landowners object to the potential loss (or reduction in value) of their development rights (Bredin, 2000). Theoretically, if there is a strong demand for permits, then

there will be high enough market price to provide ample incentive for voluntary participation from landowners.

Mandatory TDR programs also have been used; such that, landowners are precluded – via zoning policy – from subdividing their properties and instead are issued transferable 'rights' of development they may sell when they decide the market price is acceptable. In general, this mandatory approach generates a large supply of permits and, assuming a corresponding high level of demand, will ensure that essentially all parcels in the sending area will be protected. One problem of this approach is that if demand is not high, then it can lead to a flood in the supply of market permits, which can depress the value of the permits to essentially nothing. This has led to some legal concerns being raised about "takings" of value from the property owners (see Bledsoe et al 1998, for a further discussion). An alternative structure, which may have the advantage of avoiding some of the "takings" issues, is a hybrid (or partially mandatory) approach, where the zoning can be reduced on parts of a sending area, leaving some development rights in tact or available for transfer.

Demand for Development Rights

The most difficult element for programs to achieve appears to be generating sufficient demand for the TDRs. In general, the most successful programs have been in locations that were experiencing strong development pressure from large cities, such as Washington, DC, in the case of the Montgomery County, Maryland TDR program and the New York City and Philadelphia areas in the case of the Pineland TDR program in New Jersey. In situations where development pressures have been minimal, even a perfectly designed TDR program will have no activity and thus protect no land. For example, the voluntary TDR program in Thurston County, Washington, has not been able to generate significant demand for TDRs and therefore has not protected any acres. However, even in the presence of strong development pressure, demand will only exist if the TDRs

are seen by developers as the lowest cost alternatives to achieving their development objectives.

Most TDR programs have been set up as voluntary for potential buyers. In a voluntary context, if the receiving area is zoned to allow development at market capacity without needing a TDR, then there will be little demand for the TDRs. To generate sufficient demand, TDR programs must exist within a planning structure that is relatively rigid and explicitly seeks to reduce the level of development. If zoning can be readily changed or variances are easily given, then savvy developers can obtain extra density through traditional means, and thus, have little incentive to purchase TDRs (Lawrence, 1998). Furthermore, sufficient allowable density in the receiving area is necessary, and governments must adhere to TDR density bonuses and not permit re-zonings and variances, which can undermine the program by reducing the demand for permits (New Jersey Pinelands Commission, 2005). For example, the TDR program instituted by Calvert County, Maryland, has been successful (11,652 acres protected) because developers find it easier to receive a density increase through the TDR program than to petition the Planning Commission. This situation is similar to the successful programs in Montgomery County, Maryland, and the Pineland program in New Jersey where purchasing TDRs are the only feasible option for increasing density (Bledsoe et al. 1998). These examples underscore the importance of having TDR programs being complemented with strong planning and zoning ordinances can not be understated – otherwise demand for tradable development rights may never materialize.

Several other elements are important for a successful TDR program. For example, uniform standards and quantifiable measures – such as density, area, floor-area-ratio, height – should be used to determine what constitutes a development right that could be transferred (Bredin, 2000). The geographic scope of the program must be also sufficiently large to ensure that developers cannot easily avoid the reach of the program by simply moving their development projects to locations outside of the TDR. Furthermore, there must be consistency between the location of the sending and the receiving

areas and the policies of the local comprehensive plan, including the future land-use plan map. The same goes for government jurisdictional issues, especially when the receiving and sending areas cross municipal, county, and/or state lines (Bredin, 2000; New Jersey Pinelands Commission, 2005).

Complexity is one of the most widely acknowledged drawbacks of TDR programs. Because the concept of a TDR can be confusing at first and most people do not have personal experience with a marketable permit system, an extensive public education campaign is generally required to explain the operation of the program. This is particularly true for programs that do not have mandatory participation (Bledsoe et al 1998). For example, Beaufort County, South Carolina, proposed a program that was developed by a Chicago-based consulting firm and was initially well received by local advocacy groups and county councilmen. Unfortunately, the community found the program too complex and has withdrawn its initial efforts at a TDR program (Blacklocke, 1999).

To stimulate demand, governments should consider mandating that large developers acquire a minimal number of permits for all projects. Note that this would be similar to the EPA's initial requirement that all large firms participate at a minimal level in the SO₂ marketable permit program. By making the program partially mandatory, a higher level of demand will be achieved and developers will be forced to learn about the TDR program. Over time, developers may come to view the program as a preferred route of achieving their development requirements that might otherwise involve lengthy (and thus costly) variances and zoning changes. Thus, it should come as no surprise that the two of the programs that have conserved the most acres both involve mandatory participation – Montgomery County, Maryland (48,584 acres) and the New Jersey Pinelands, New Jersey (44,000 acres) (Table 1). These two programs represent more than 41% of all of the acres preserved by all TDR programs.

Alternatively, programs may want to explore the potential advantages of having a non-profit organization facilitate

the development right transfers. If the tax-deductible status of the non-profit organization can be used to lower costs for developers and thus stimulate demand, then the conservation objectives of the program will be furthered. However, as discussed below, the involvement of the non-profit organization should be limited as much as possible to facilitate market transparency and efficiency.

Market Structure, Transparency, and Transaction Costs

In their theoretical paper, Field and Conrad (1975) argue that the benefits of a TDR program will occur only if there is a “well organized auction” where the transaction costs between the buyers and sellers are as low as possible. High transaction costs lower the incentives for both buyers and sellers to participate and thus decrease the quantity of acres protected. Furthermore, trades need to happen in a timely manner. Unfortunately, TDR programs have not often involved ideal methods for connecting potential sellers and buyers. For example, some programs have required direct communication and negotiation between land owners and developers, which can lead to lengthy discussions and high search/information costs. Other programs have put government staff members directly in the coordination role, which can also involve a lengthy review and approval process. These types of market structures can lead to reduced market activity due both to high transaction costs and a lack of information on previous prices (McConnell, Kopits, Wall, 2003). For example, the TDR program in Calvert County, Maryland, initially had a few transactions but later became more successful once information for buyers and sellers became more ample.

TDR banks have frequently been established to help facilitate TDR markets. For example, the TDR bank in King County, Washington, has purchased rights for 90,285 acres with the goal of later selling them to private developers. However, to date, developers do not appear to be significant buyers in this market, as they have purchased rights to less than 1% protected by this program.

Thus, unless private demand increases in the future, this program will be – in its essence – a Purchase of Development Right (PDR) program. Consequently, the number of acres reported to have been protected by TDR programs will have been overstated as the 91,000 acres protected by King County Washington, comprise 40% of the national total (Table 1).

One advantage of TDR banks is that they can serve as the buyer of “last resort” something that can alleviate legal “taking” concerns arising out of the case *Suitum v. Tahoe Regional Planning Agency*, where the courts ruled that the State had exhausted its procedures and the free-market price for the rights was insufficient (Bledsoe et al. 1998). While addressing this legal concern may be important, as discussed above, a robust market demand for the rights should ensure a reasonable price for the TDRs and thus avoid the takings issue.

Ideally, the government’s role should be limited to the planning efforts and delineating the sending and receiving zones. A market system should take over once the rules have been established. In some cases, such as the successful TDR program in Montgomery County, Maryland, and the tradable permit systems for fireplaces in Telluride, Colorado, the development rights can be bought and sold through the existing real estate system, where realtors earn commissions on the transactions and thus have an incentive for publicizing the program. Alternatively, a market structure that achieves Field and Conrad’s objective of a “well organized auction” is to use a double-auction mechanism that is an information-rich environment that can be easily viewed and accessed by buyers and sellers with minimal government involvement (for more information about double-auctions see Davis and Holt, 1993; Smith and Williams, 1983). This process can be readily adapted to a web based “eBay-like” format that could ensure low transaction costs and speedy transactions.

DISCUSSION

Several concerns have been raised about TDR programs. For example, some question whether these programs can result in more development than under a standard zoning policy. This problem could result if some of the property owners of the sending areas may not have intended or been willing to sell their land (at least in the short-term), but are nevertheless granted TDRs, which are then traded and used for development that would have otherwise not occurred (Levinson, 1997). This problem can be potentially alleviated with a local government purchasing program to take TDRs off the market. The New Jersey Pinelands project achieved this solution. However, given the low levels of historical success of these programs, conservation planners should not be overly concerned about this issue, especially since the primary problem with this program is not excess supply, but instead a lack of demand.

Political and Legal concerns have also been raised about the designation of the receiving areas. For example, the TDR program in San Luis Obispo County, California, was challenged by a citizens group who were concern about the environmental impact that could result from additional density (Bledsoe et al. 1998). The lack of political consensus on the receiving zones may also undermine the potential success of these programs.

Another potential program was pointed out in a study by Lynch and Musser (2001) of conservation programs in Calvert, Howard, and Montgomery counties in Maryland. They argue that voluntary TDR programs have generally done a worse job at protecting the areas with the highest agricultural value in comparison to PDR programs. A primary reason for this finding is that in these counties acreage has been the sole metric defining a TDR. Without considering the quality of the acres, more of the lower-quality agricultural land gets preserved by TDR programs. In contrast, most PDR programs explicitly target high-quality agricultural lands. Additionally, many of the characteristics of high quality agricultural land (good soils, gentle slopes, and road frontage) are closely correlated with the characteristics of land with good

development potential. Consequently, an adverse selection problem arises as many of the sending owners are those with the lowest quality lands from both an agricultural and development perspective. Of course, if the goal is simply to maximize acres protected, then using farm size as the sole metric is fine. Note that to respond to this problem, Montgomery County set up a PDR program, in addition to its TDR program, to specifically acquire the higher valued agricultural land (12,801 acres) that were not being protected by its TDR program (Lynch and Musser, 2001).

Finally, concerns about establishing a robust market led the Town of Berthoud, Colorado, to avoid a TDR program all together and instead to opt for a density transfer fee, where the proceeds from the fee are used to purchase existing development rights from areas that were desired for protection (Pelletier, 2001). This type of alternative mechanism may be particularly attractive in situations where a PDR program already exists, the number of likely market participants is low, and the complexity of issues (whether legal or inter-jurisdictional) are high.

CONCLUSION

The logic of transferring development rights from an area in need of protection to one desiring more development remains strong. Yet real world examples show that problems typically plague the programs and limit their success. These problems, however, are not insurmountable and this document outlines an economic framework from which several recommendations are evident. First, an ample supply of development rights can be achieved from either a voluntary or mandatory program, assuming a robust level of demand and an efficient market structure. Voluntary programs have the desirable characteristic of avoiding concerns related to takings, while mandatory programs are better at ensuring that the most critical lands are actually protected. To ensure sufficient demand, TDR programs must be developed to coordinate closely with existing planning efforts; and be relatively rigid, precluding easy re-zoning or variances. Additionally, a program involving

mandatory purchase of a minimum number of development rights by large developers is likely needed to encourage sufficient demand, at least in the initial stages. Finally, the TDR market structure needs to ensure low transaction costs and the transactions must be conducted in a transparent, expedient, and information rich setting.

ACKNOWLEDGMENTS

The author wishes to thank Will Allen for his encouragement and support for this research and Brian Porrell, Holly Payne, Du Xu and Eliot York for their research assistance.

LITERATURE CITED

- American Farmland Trust. 2001. Fact Sheet: Transfer of Development Rights. Northampton, Massachusetts,
- Blacklocke, S. 1999. Addressing Urban Sprawl in South Carolina: The Market Alternatives. A Summary of Approaches Associated with Smart Growth Strategies. Clemson, South Carolina.
- Bledsoe, M., Covert, J., Freeman, M., Jones, W., and Rierson, A. 1998. A Introduction to Transferable Development Rights, The Etowah Initiative at the River Basin Center, University of Georgia.
- Bredin, J. 2000. Transfer of development rights: Cases, Statutes, Examples and a Model. APA National Planning Conference.
- The Cascade Land Conservancy 2007. Transfer of Development Rights. Seattle, Washington. www.cascadeland.org/cascade-agenda/communities/tdr/case-studies.
- Davis, D.D. and Charles A. Holt. 1993. Experimental Economics. Princeton University Press, Princeton, New Jersey.
- Dehart, H.G. and R. Etgen. 2007. The Feasibility of Successful TDR Programs for Maryland's Eastern Shore. Report to Maryland Center for Agro-Ecology, Inc.
- Field, B.C. and Jon M. Conrad. 1975. Economics Issues in Programs of Transferable Development Rights. Land Economics (4)331-340.
- Johnston, R.A. and Mary E. Madison. 1997. From Landmarks to Landscapes: A Review of Current Practices in the Transfer of Development Rights. Journal of the American Planning Association Vol. 63.
- Lawrence, T.J. 1998. Transfer of Development Rights. Land Use Series CDFS 1264-98. Columbus: Ohio State University Extension.
- Levinson, A. 1997. Why Oppose TDR programs?: Transferable Development Rights Can Increase Overall Development. Regional Science and Urban Economics 27(3): 286-296.
- Lynch, L. and W.N. Musser. 2001. A Relative Efficiency Analysis of Farmland Preservation Programs. Land Economics 77(4): 577-594.
- McConnell, V., E.Kopits, and M. Walls. 2003. How Well Can Markets for Developments Rights Work? Evaluating a Farmland Preservation Program. Resources for the Future.
- New Jersey Pinelands Commission. 2005. The New Jersey Pinelands Development Credit (PDC) Program. New Liston, New Jersey.
- Pelletier, M. 2001. Density Transfer Fee: A Fee in Lieu of a Transfer of Development Rights (TDR) Program. 2001 APA National Planning Conference.
- Smith, V.L., and A.W. Williams. 1983. An Experimental Comparison of Alternative Rules for Competitive Market Exchange. in R. Englebrech-Wiggans et al., (eds.) Auctions, Bidding, and Contracting: Uses and Theory. University Press. New York.