

Analysis of Farmland Protection Programs

Given that government programs reflect (albeit imperfectly) public preferences, the details of farmland protection programs presumably reflect the relative importance of a variety of rural amenities. With the goal of learning more about which rural amenities matter, we analyzed several strands of evidence related to government programs designed to protect rural lands. In this chapter, we discuss our review of the enabling legislation of State-level agricultural lands protection programs, and a comparative analysis of ranking criteria used in several State and local agricultural PDR programs; we also present a set of in-depth case studies of the suite of land preservation programs employed by several States.

Review of enabling legislation:

The enabling legislation of many programs often contains statements relating to purpose. By examining the language of a broad set of programs related to agricultural land preservation, one may discern the motivations of the legislators, and, presumably, the preferences of the citizenry.

Comparative analysis of ranking criteria:

Once adopted, most agricultural PDR (and TDR) programs face annual budget constraints requiring them to pick from among a set of candidate land parcels. Formal criteria are frequently used to rank parcels, criteria that explicitly weight the various attributes of each parcel. To the extent that these attributes can be correlated with specific rural amenities, such ranking schemes offer a direct measure of the value of different rural amenities.

Case studies:

Agricultural land is one of several rural land types that provide amenities. Thus, neglecting to consider the size and emphasis of other rural land protection policies can yield a misleading picture of the overall importance of the various rural amenities. To account for this complexity, the agricultural land protection programs of several States are studied in greater depth, and are placed within the context of other programs that protect rural land.

Throughout this analysis, one should keep in mind several factors that may limit the accuracy with which legislation reflects popular preferences:

- ◆ Enactment of farmland protection legislation is sensitive both to the demand for rural amenities and to the supply of rural lands. That is, as discussed earlier, in regions where farmland is abundant, there is less need for legislation devoted to farmland protection, even if the population of these regions has a high demand for their rural amenities.
- ◆ Adoption and implementation of farmland protection programs is subject to all the vagaries of the political process, including the possibility that some interest groups are over-represented relative to the preferences of the general public (Appendix 2).
- ◆ Similarly, institutional factors, such as adoption of features of a neighboring State's program as a legislative shortcut, may obscure the true preferences of the public (Appendix 2).

The latter two points are of particular interest, for they may lead our analysis to conclusions that have little to do with the underlying preferences of the citizens of the State. However, these programs represent real commitment of taxpayer funds, commitments that have often been reaffirmed over more than 20 years of budget allocations. Hence, the impetus driving the adoption of farmland preservation programs is not likely to be a mere fluke of politics.

National Analysis: A Review of Enabling Legislation

One source of information on the demand for individual components of rural amenities is the text of the legislation enacted by States to establish their farmland protection laws and programs. As part of the legislative process, and sometimes according to legal mandate, legislation proposed in most State legislatures includes a prefatory section of text, specifically referred to as a "purpose clause" or "findings clause." These are official statements of the legislature that describe the intent or goals of the legislation. Thus, the language (text) of legislation, especially that found in purpose clauses, often identifies the specific outputs that the public hopes to protect.

The Legislative Process

By definition, laws, and thus the phrasing of the purpose clauses, are the outcomes of a political

process. In fact, the intent of the legislature in enacting a statute always controls its meaning. Judges, attorneys, historians, and others, study intent for guidance in interpreting statutes. Courts have developed, and legislatures have enacted, elaborate sets of rules governing statutory construction, including, in some cases, the incorporation of purpose clauses. These rules are designed to help courts ascertain a legislature's intent. Though the concept of legislative intent encompasses much more than purpose or findings clauses,¹⁸ courts look first to the statutory language. Only when the ordinary rules of statutory construction fail adequately to elucidate the legislature's intent, do courts and attorneys turn to other indicators of legislative intent.¹⁹

In other words, legislative intent is an expression of public preferences and is revealed in statutory language. Therefore, public law may contain evidence as to what goods and services (such as rural amenities) citizens strive to protect when their legislature institutes farmland protection programs.

The Data

The American Farmland Trust (AFT) has collected sections of State code that pertain to farmland protection laws. These include laws that establish agricultural districts, agricultural protection zoning, comprehensive growth management, conservation easements (such as PDRs and TDRs), differential assessment, and right to farm.²⁰ Using AFT's online links (<http://www.farmlandinfo.org/>), we reviewed the purpose and findings clauses embedded in these sets of State code to identify key phrases that refer to specific

¹⁸ Legislative intent, also referred to as legislative history or legislative purpose, can be loosely defined as the documents that contain the information considered by the legislature prior to reaching its decision to enact a law (Jacobstein and Mersky).

¹⁹ "Studying the background and events that led to a bill's passage, as well as the social, economic, and political climate of the period may also be helpful in determining legislative intent." (New York State Library: <http://www.nysl.nysed.gov/legint.htm>). See Adelaja and Friedman (1999) for an application.

²⁰ When analyzing these laws, we did not include legislation that enables the "concept" of purchase of conservation easements. These laws (variants of which are found in nearly all States) were enacted merely to remove historical common law impediments to the acquisition of partial interests; they do not appropriate funding for any particular easement program.

²¹ For some States, Maryland for example, AFT does not provide the law, or an appropriate link. In these cases, State sources for codes are available.

rural amenities.²¹ The initial step was to review the laws collected by AFT pertaining to farmland preservation in the 48 contiguous States (as summarized in table 2a). This process yielded a large number of "catch phrases," many of which appeared to be synonyms for an underlying core set of outputs.

To synthesize this information, each phrase was categorized on the basis of an identified output. Based on our literature review (described earlier), and on our reading of the enabling legislation, we developed a list of five broad categories: "orderly development," "food security," "local economy," "environmental services," and "protection of rural amenities." The fifth category (protection of rural amenities) is then subdivided into four sub-categories.

Results

These five categories (and four sub-categories) are shown in table 2b (with States sorted into USDA's 10 Farm Production Regions). An "X" indicates that at least one of a State's farmland protection laws mentioned that output.²² From this perspective, the "protection of rural amenities" category is mentioned most often (by 36 States), including all of the Northeast, Lake, Appalachian, and Pacific States. "Orderly development" is mentioned by only 18 States.

Table 2b clearly shows that the Northeast, Lake, and Pacific regions place emphasis upon almost all of the outputs. In fact, with one exception, all three States in the Pacific region mention all five categories. Local food security has broad appeal and is emphasized in 30 State codes; only three of these States also mention national food security (Appendix 3, appendix table 3.2). In contrast, "orderly development" is hardly mentioned in the Northern Plains, Appalachian, Southeast, Delta, Southern Plains, and Mountain regions. And, with the exception of Appalachian, those same regions hardly mention the "local economy" as a category.

It is instructive to examine the subcategories within "protection of rural amenities" (the right-hand side of table 2b). The amenities sub-categories mentioned most frequently are "rural/agrarian character and

²² We also created a weighted classification that assigned higher scores when the legislation contained more language about a given amenity. Since the conclusions were essentially the same, and since our scoring mechanism was highly subjective, we present our results using this simpler "YES/NO" type of scoring.

Table 2a—Types of farmland protection programs adopted, by State

Region	State	Agricultural districts	Agricultural protection zoning	Differential assessment	PACE (PDR)	Right-to-farm	Transfer of development rights
Northeast	Connecticut			X	X	X	X
	Delaware	X		X	X	X	
	Maine			X	X	X	
	Maryland	X	X	X	X	X	X
	Massachusetts	X		X	X	X	X
	New Hampshire			X	X	X	
	New Jersey	X		X	X	X	X
	New York	X		X	X	X	X
	Pennsylvania	X	X	X	X	X	X
	Rhode Island			X	X	X	
Vermont			X	X	X	X	
Lake States	Michigan		X		X	X	
	Minnesota	X	X	X		X	X
	Wisconsin		X	X	X	X	
Corn Belt	Illinois	X	X	X		X	
	Indiana		X	X		X	
	Iowa	X	X	X		X	
	Missouri			X		X	
	Ohio	X	X	X	X	X	
Northern Plains	Kansas		X	X		X	
	Nebraska		X	X		X	
	North Dakota		X	X		X	
	South Dakota		X	X		X	
Appalachia	Kentucky	X		X	X	X	
	North Carolina	X		X	x*	X	
	Tennessee	X		X		X	
	Virginia	X	X	X	x*	X	
	West Virginia			X		X	
Southeast	Alabama			X		X	
	Florida		X	X	X	X	X
	Georgia			X		X	
	South Carolina			X		X	
Delta States	Arkansas			X		X	
	Louisiana			X		X	
	Mississippi			X		X	
Southern Plains	Oklahoma			X		X	
	Texas			X		X	
Mountain	Arizona			X		X	
	Colorado		X	X	X	X	X
	Idaho		X	X		X	X
	Montana		X	X	x*	X	X
	Nevada			X		X	
	New Mexico			X		X	
	Utah	X	X	X	x*	X	X
	Wyoming		X	X		X	
Pacific	Alaska			X		X	
	California	X	X	X	X	X	X
	Hawaii		X	X		X	
	Oregon		X	X		X	
	Washington		X	X	X	X	X

x* indicates Purchase of Agricultural Conservation Easements (PACE) or Purchase of Development Rights (PDR) programs in plenary stage.
 Source: AFT 1997, updated March 2002.

Table 2b—Legislative intent of farmland preservation programs

Key to columns:

- 1 DEV: Orderly development
- 2 FSEC: Food security
- 3 ECON: Local economy
- 4 ENV: Environmental services
- (5) AMEN: Protection of rural amenities.

The rural amenities are:

- 5.1 (OS): Open space
- 5.2 (CHAR): Rural/agrarian character and active agriculture
- 5.3 (HAB): Wildlife habitat/natural area
- 5.4 (SCEN): Aesthetics, scenic beauty

An "X" indicates that at least one of a State's farmland protection laws mentioned the output described in the column heading.

		1 DEV	2 FSEC	3 ECON	4 ENV	5 AMEN	5.1 OS	5.2 CHAR	5.3 HAB	5.4 SCEN
Northeast	Connecticut		X	X	X	X	X	X	X	X
	Delaware		X	X	X	X	X	X	X	X
	Maine	X	X	X	X	X	X	X	X	X
	Maryland	X	X	X	X	X	X	X	X	X
	Massachusetts		X		X	X	X	X	X	X
	New Hampshire				X	X	X	X	X	X
	New Jersey	X	X	X	X	X	X	X	X	X
	New York		X	X	X	X	X	X		X
	Pennsylvania	X	X	X	X	X	X	X		X
	Rhode Island	X	X	X	X	X	X	X	X	
Vermont	X	X	X	X	X	X	X	X	X	
Lake States	Michigan	X	X	X		X	X			
	Minnesota	X	X	X	X	X	X	X		X
	Wisconsin	X		X	X	X	X			X
Corn Belt	Illinois	X	X	X	X	X	X	X	X	X
	Indiana		X							
	Iowa	X	X	X		X	X	X	X	X
	Missouri	X		X	X	X	X	X		X
	Ohio			X	X	X	X	X	X	X
Northern Plains	Kansas		X							
	Nebraska	X			X	X	X	X		
	North Dakota									
	South Dakota		X							
Appalachians	Kentucky		X	X	X	X	X	X	X	X
	North Carolina		X	X	X	X		X		
	Tennessee	X		X	X	X	X	X	X	X
	Virginia		X	X	X	X	X		X	X
	West Virginia		X			X		X		X
Southeast	Alabama									
	Florida					X		X	X	X
	Georgia		X		X	X		X	X	
	South Carolina		X							
Delta States	Arkansas		X		X	X	X		X	
	Louisiana			X	X	X	X	X		X
	Mississippi									
Southern Plains	Oklahoma									
	Texas		X							
Mountain	Arizona		X			X	X	X	X	X
	Colorado		X		X	X	X	X	X	X
	Idaho									
	Montana	X			X	X	X	X	X	X
	Nevada					X				X
	New Mexico									
	Utah					X	X	X	X	X
Wyoming										
Pacific	California	X	X		X	X	X	X	X	X
	Oregon	X	X	X	X	X	X	X		X
	Washington	X	X	X	X	X	X	X	X	X
48 States		18	30	23	29	36	31	31	24	30

active agriculture,” “open space,” and “aesthetics, including scenic beauty” (31, 31, and 30 mentions, respectively). The “wildlife habitat/natural area” was mentioned less often (24 times).²³

Overall, although the review of the purpose and findings clauses in State codes suggests that a broad, underlying core of outputs is widely sought by citizens across the United States, it appears that protection of a range of rural amenities through farmland protection programs is primarily a concern of the most densely populated States. Less densely populated States and regions express concern about fewer amenities. Nonetheless, various rural amenity subcategories still have broad appeal (especially “rural/agrarian character,” with 31 mentions).

However, some reasons mentioned in most States are hardly mentioned in the sparsely populated Northern and Southern Plains, perhaps indicating such an abundance of these outputs that their mention in farm preservation legislation is not warranted (in some States, almost no farmland preservation programs have been enacted). Predictably, protecting “rurality”—the agricultural community/economy and nonagricultural development—is not of primary concern in the vast, less densely populated areas of the United States, with their extensive agricultural lands and public open spaces.

These findings, that the public cares about a broad set of outputs that include a number of rural amenities, roughly agree with the findings of the literature (as summarized earlier). There is a widely prevalent concern with maintaining active agriculture, coupled with concern for rural amenities that are less dependent on active agriculture (such as maintaining “open space” and “scenic beauty”). Although suggestive, this “analysis through classification” is rather coarse. A closer look at the workings of individual programs may reveal more about the finer details of just which rural amenities matter most.

In-Depth Analysis: Focus on the Northeast

To ascertain public preferences for rural amenities, a more detailed and a broader look at farmland protection programs may yield insights beyond those gathered from our analysis of enabling legislation. In this section we consider both approaches. To better focus the analysis,

²³ We also created an expanded (17 categories) list, displayed in Appendix 4. Although the expanded list presents a more nuanced picture, the general conclusions do not change.

we limit our attention to five Northeastern States, chosen largely because they have active portfolios of State and county programs aimed at preserving rural amenities, both through farmland protection and other rural land programs. In addition, as summarized in table 3, these five States are leaders in their use of agricultural PDR and TDR programs. We believe these programs to be a primary indicator of intensity of demand for rural amenities provided by farmland, from which we can discern information about the public’s interest in individual components of the rural amenities bundle.²⁴

This Northeastern focus is not meant to suggest that other regions of the country are not interested in farmland protection. For example, Colorado has a large and growing rural land (including farmland) protection program. California, while it does not have a State-run agricultural PDR program,²⁵ was an early adopter of differential assessment (the Williamson Act of 1965). Oregon, as exemplified by Portland’s urban growth boundary, is also active.

Of course, the Northeastern States we focus on may not be fully representative of the Nation. It can be argued that the Northeast is uniquely different, as reflected in settlement patterns and population demographics,²⁶ as well as in ecological, geophysical, and climatic attributes. These differences might mean that residents of the Northeast have preferences that are systematically different from the rest of the Nation.

Nevertheless, in general the Northeastern States have several decades of experience with a broad set of programs, hence are most conducive to our analysis. In addition, these five States have seen both a substantial decrease in agricultural lands and a large increase in urban lands (see figure 7). In many ways, the Northeast may be a bellwether for other rapidly growing regions.

²⁴ These five States are representative of the rate at which prime farmland is developed—and slowing the rate of land conversions provides an impetus for farmland preservation. NRI data reveal that between 1992 and 1997, these States ranked between 6th (Pennsylvania), and 49th (Vermont) in terms of average annual rates of conversion of prime farmland (<http://www.nhq.nrcs.usda.gov/land/tables/t5853.html>).

²⁵ The California Farmland Conservation Program, authorized in FY2000 with a budget of \$25 million, provides grants to local governments, non-profits, conservation districts, and other organizations whose stated purpose includes conservation of farmland (<http://www.consrv.ca.gov/dlrp/CFCP/index.html>).

²⁶ Such as the greater importance of older, more densely populated, city centers.

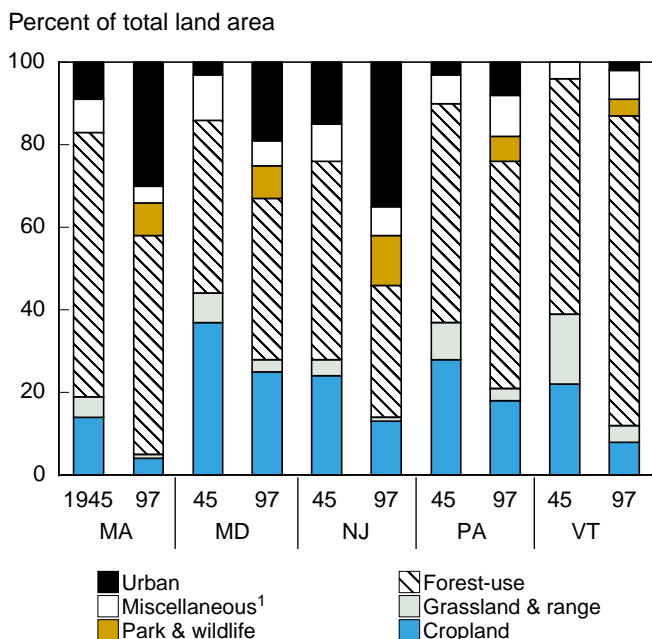
We start by examining the ranking criteria of several State and local agricultural PDR programs in several Northeastern States. These criteria can highlight the importance of various rural amenities, and how this

Table 3—Agricultural PDR acres protected¹

State	Acres protected (rounded to 1,000)	Funds spent to date	Easements/ restrictions
	<i>Acres</i>	<i>Million dollars</i>	<i>Easements</i>
Maryland	186,000	232	1,303
Pennsylvania	186,000	377	1,527
Vermont	88,000	44	278
New Jersey	71,000	197	483
Massachusetts	48,000	117	527
Delaware	61,000	61	273
Connecticut	27,000	79	197
7-State total	667,000	\$1,107	4,588
19-State total	806,300	\$1,210	4,898
Including local (county) totals	997,000	\$1,743	6,247

¹ This table displays three measures of acres protected, as of fall 2001, by the top seven (out of 19) State-level PDR programs. Except for the last row, these numbers exclude acres protected through county-level programs.
Source: American Farmland Trust.
(http://www.farmlandinfo.org/fic/tas/PACE_State_2002-1-23.PDF)

Figure 7
Land change, by selected States, 1945 to 1997



¹Transportation, industrial, residential, marshes, deserts, and other unclassified rural lands.

Source: Vesterby, M., and K.S. Krupa (2001). "Major Land Uses." (Database 1945-97) <http://www.ers.usda.gov/data/majorlanduses>.

importance can vary across States. Second, we take a broad look at the land use policies of these five States through case studies, where we consider both farmland and non-farmland programs. We conclude this section with a set of lessons learned.

Analysis of Ranking Criteria Used in PDR Programs

By permanently restricting development of agricultural lands, agricultural PDR programs contribute to the protection of rural amenities. Government agencies administering PDR programs cannot directly control the type of agricultural activity that occurs on preserved lands (because an easement restricts non-agricultural uses without inhibiting landowners' other rights to use the land). However, through its program design, the government can influence the likelihood that certain lands—along with their accompanying amenities—in particular areas will be preserved.

Governments exert their preferences through the use of ranking mechanisms to prioritize applications for easements. The ranking is often used to determine the order of the offers to purchase easements if the PDR program is oversubscribed, to limit the number of applications that will be considered, or to establish the easement value. Agencies administering PDR programs likely prioritize their easement purchases based on which are likely to yield the greatest benefits for citizens within the jurisdiction. Therefore, the ranking mechanisms can implicitly reveal information about the combined effect of the relative scarcity of particular farmland attributes and the preferences the public has over these attributes.²⁷ In this section, we take a closer look at the ranking mechanisms and what they reveal about the variations in preferences for preserving rural amenities in different counties and States.

Overview

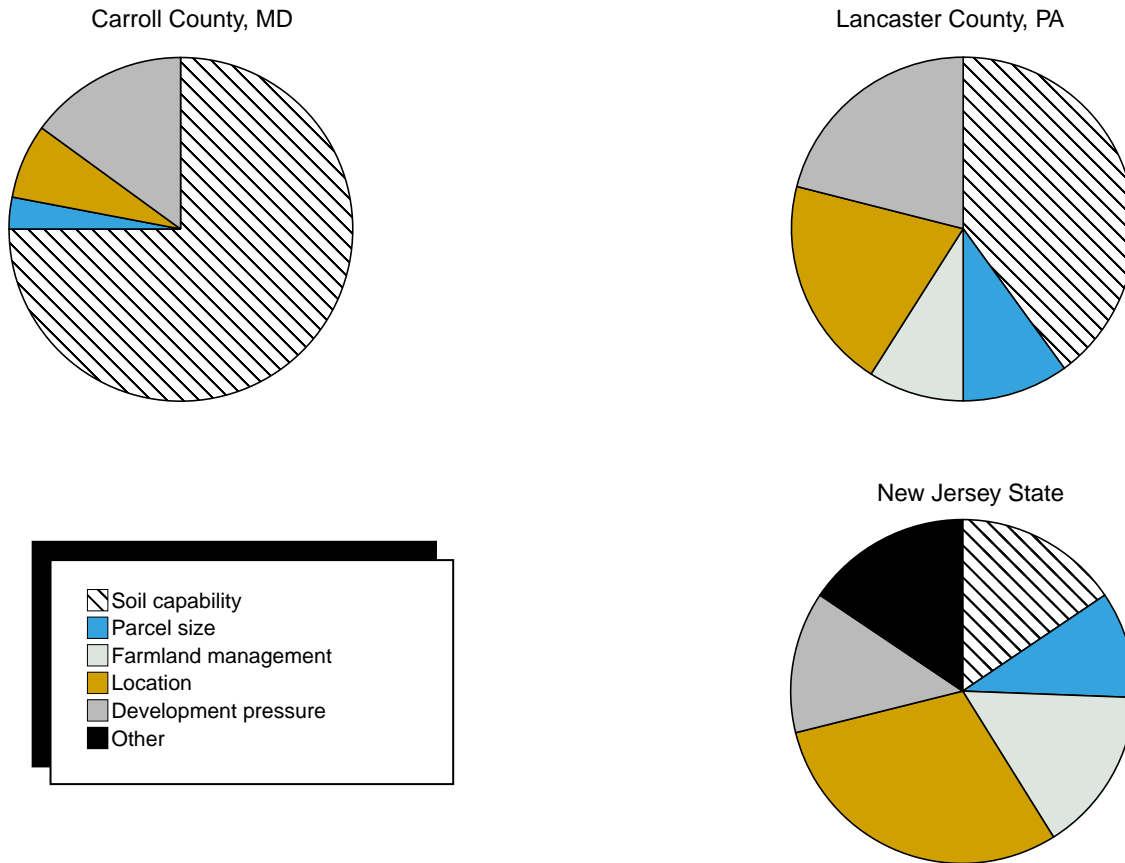
Figure 8 depicts the relative weights placed on various categories by several agricultural PDR programs. Appendix 4 contains a detailed table that shows, for these and several other (State and county) programs, more explicit factors used to rank a parcel. The appendix also includes a table listing the minimum eligibility criteria to sell easements in these programs.

²⁷ Since participation in PDR programs is voluntary, the preservation outcomes will depend on which landowners choose to participate. However, Nickerson finds evidence that ranking criteria do influence what lands are ultimately preserved.

Figure 8

Examples of agricultural PDR ranking criteria

Proportion of total points allocated to broad categories of land characteristics



Note: PDR programs often prioritize applications by ranking them based on which parcels have the most desired set of land characteristics. The about pie charts illuminate how a few of these programs vary in their preferences for particular characteristics.

In Maryland’s State agricultural PDR program, participating counties have sole discretion in developing their ranking criteria; in Pennsylvania, counties can allocate points to factors within State-mandated ranges. In New Jersey, the State and counties purchase easements (the State will buy easements or fund 80 percent of the cost for counties to do so), but many counties voluntarily follow the State’s ranking criteria. In Massachusetts and Vermont, the factors considered in the ranking are not awarded points per se, but are described in order of importance.

Importance of Soil Quality

Soil quality tends to be the most important parcel characteristic, typically accounting for nearly half of the allocated points (with a range varying between 9 percent and 75 percent of allocated points). Common to all the programs is a preference for preserving

parcels with the highest soil quality. Although soil quality itself is not an explicit preference for a particular type of farming, higher quality soils are typically used for row crops.²⁸

Although soil quality is an important factor, exceptions are often allowed. For example, the Maryland State agricultural PDR program allows counties to relax minimum soil standards if the land is used for specialized production such as dairying, poultry production, orchards, and vineyards. However, Maryland counties differ in which types of farms are awarded points. If soils are poorer quality, Caroline County will award

²⁸ In some programs, a preference for high soil quality is coupled with a preference for row cropping operations. In others, row cropping operations are not necessarily favored. For example, Caroline County’s (MD) ranking is unique in that it awards as many points for productive woodland as it does productive cropland.

points if a significant portion of the farm is devoted to specialized use or non-food production such as horses. Conversely, Carroll County's program specifically does not relax its standards for horse farms because they do not contribute to the production of food and fiber and tend to be raised as a hobby rather than as a "valid" agricultural operation there (Carroll County Commissioners 1999—Agricultural Preservation Ordinance 99-9). Taking a different tack, Massachusetts considers soil quality, but also targets preserving different types of farms—a requirement that serves to prevent concentration of all protected lands in the portion of the State with the best soils (the Connecticut River Valley).²⁹

Unique Contribution to Agricultural Community

Several programs also rank higher parcels that contribute significantly to the local agricultural economy. In particular, Maryland's State Rural Legacy program and Vermont give these parcels high priority. Whether this preference results in the protection of rural amenities or "disamenities" will depend on which facilities are preserved and where they are located. For example, in Howard County (MD), parcels with important regional grain processing facilities are prioritized for preservation. These facilities may be an important factor in maintaining the viability of agriculture in the county (and thereby help to preserve the overall flow of rural amenities to the county's citizens); but they may be considered a disamenity to non-farmers living near them.

Preserving Larger Farms and Blocks of Farms

All programs reveal a preference for preserving larger farms, but the emphasis placed on preserving the largest farms, relative to other parcel characteristics, varies widely across programs. In the Massachusetts program, parcels as small as five acres can be enrolled and parcel size is a third priority in its ranking scheme. In the Maryland State agricultural PDR program, even though parcels must be at least 100 acres to qualify for easement sale, the emphasis on large parcels can be quite different. For example, Caroline County awards 22 percent of points to parcels of at least 175 acres, but Carroll County allocates only 3 percent of points to 200-acre farms.

²⁹ Source: personal communication, Richard Hubbard, Massachusetts Department of Food and Agriculture.

Some programs appear to place a greater emphasis on preserving blocks of contiguous parcels instead of large individual parcels. Of the PDR programs reviewed here, those in New Jersey place the greatest emphasis on preserving contiguous blocks of farmland, with 18-20 percent of total points allocated to this category compared with 5-9 percent for individually large parcels. In some programs, like those in Carroll County (MD) and Luzerne County (PA), being within 0.5-2.0 miles of preserved farms is sufficient to earn a higher rank. The Montgomery County (MD) program is notable for its emphasis on preserving parcels within 0.5 mile of the suburban edge of the agricultural zone, rather than prioritizing preserving clusters within the agricultural zone. Howard County (MD) does not emphasize contiguity, perhaps because the county is approaching build-out, little undeveloped land remains, and agricultural preservation occurs in zoning districts that allow a substantial amount of development.

Location of Preserved Farms and Amenities Relative to Populated Areas

Even though the public does not enjoy the right of public access to preserved farmland, people may derive value from viewing the rural amenities associated with preserved farmland, particularly when preservation areas are relatively close to developed areas. Most of the programs target preserving farm parcels that face development pressure but are located in agricultural or rural areas that are consistent with local land use plans. Of the programs reviewed, anywhere from 10 percent (in PA counties) to about 30 percent (in Montgomery County, MD) of total points are allocated to indicators of development pressure, with the maximum number of points earned by parcels facing the greatest pressure. An exception is Cecil County (MD) which targets purchasing easements on parcels where the threat of conversion to non-agricultural uses is low. Several programs target parcels with road frontage, with two counties—Montgomery and Howard Counties (MD)—allocating the greatest number of points to this criterion (approximately 15 percent and 9 percent of points, respectively). Similarly, Vermont seeks to preserve parcels with road frontage because such an approach "provides scenic vistas to the travelling public."³⁰

³⁰ Source: VHC undated document titled "Grant of Development Rights, Conservation Restrictions, Contingent Right of the United States of America and Right of First Refusal."

Recently, Maryland has increased its efforts to concentrate easement purchases in particular areas. As part of recently enacted smart growth legislation, it implemented the Rural Legacy program which targets land preservation efforts on very specific blocks of land in several areas around the State.

Effect of Purchasing Easements at Least Cost

Even though the ranking schemes may prioritize relatively contiguous blocks of farmland and the most productive agricultural soils, several State agricultural PDR programs will ultimately prioritize purchasing easements at the least cost. That is, they will offer to purchase easements at the landowner's bid price if it is less than the estimated easement value. Although this strategy allows a State government to preserve more land with limited funding, it is more difficult to target the types (and location) of amenities that are preserved along with farm parcels. Idiosyncratic characteristics of landowners (that induce them to offer to sell the easement at a discount) may significantly affect the prioritization of farm parcels and hence the preservation of their accompanying amenities.

Two years ago Maryland allowed counties to choose whether the State would use least-cost criteria as the means for prioritizing easement purchases in their county, or the county-determined ranking scheme. At least seven of 18 participating counties have chosen to adopt the county ranking as the means for prioritization. This change gives these local governments more ability to target the types of amenities that are preserved.

Some programs cap the amount the State or county will pay per acre (e.g., at \$2,500/acre in Luzerne County, PA; \$10,000/acre in Massachusetts; and \$975/acre in Vermont). In these jurisdictions, preservation may occur where the payment cap does not deter landowners from preserving their land; for example, in somewhat more rural areas, and on parcels more removed from development.

Summary

A comparison of the criteria used to rank easement applications suggests that although similarities exist in the parcel characteristics that various State and local governments seek to preserve through farmland preservation programs, there are also notable differences. There is no "one-size-fits-all" program. Preferences

for the accompanying rural amenities that are preserved, therefore, differ across these jurisdictions.

For example, all of the programs prioritize preserving land with soils that are considered the most productive for row crops, but programs differ in the types of specific farming operations (specialized production, non-food operations such as horse farms) that are ranked higher. Also, some programs prioritize preserving contiguous parcels while others prioritize large, individual parcels. While this suggests that preserving large blocks of farmland is important, buying easements first on parcels that are the least costly may lead to a scattered pattern of preservation. Nevertheless, in a study using data on preserved and unpreserved farm parcels in Maryland, Nickerson found evidence that such programs can and do result in the preservation of relatively clustered parcels. Preserving the largest individual farms appears to be less important than protecting the most productive land in almost all of the programs reviewed here.³¹

Of the ranking criteria reviewed here, the emphasis on preserving productive soils and row cropping operations suggests the largest preference is for preserving "traditional" cropland and livestock operations.³² If program administrators are concerned with long-term farm viability, they may seek to preserve lands that are most likely to be profitable to farm for the foreseeable future. To the extent that highly productive soils³³ guarantee long-term profitability, and to the extent that the rural amenities flowing from farms with these soils is equivalent (or superior) to the rural amenities produced by farms with lower quality soils, it is sensible to give highest priority to preserving farms with the most productive soils.

³¹ Using data on the actual parcels preserved in several Maryland programs, Lynch and Musser found evidence of the tradeoffs that program administrators make in achieving various program goals. They found that when purchasing easements at least cost is a program goal, the program is less likely to preserve as desirable a set of characteristics relating to soil quality, threat of development, and contiguity of preserved farms. They also found evidence suggesting that farm size and soil quality carry greater weight than proximity to urban centers and clustering of preserved farms.

³² Maryland's new Rural Legacy Program couples preserving farm parcels with important natural resources (wildlife habitat, etc.). This additional preservation effort suggests that preferences for, and benefits from, preserving other amenities that are not uniquely associated with farmland are increasing in that State.

³³ This argument also applies to factors such as "row cropping" and "agricultural infrastructure" that may indicate farm profitability.

Lastly, as noted earlier, the public supports farmland protection for “environmental” reasons in addition to protecting family farms and the food supply. No single reason appeared dominant in those studies, although respondents in certain regions favored certain reasons over others (e.g., environmental concerns predominated in Rhode Island). Our analysis of a limited set of PDR ranking schemes suggests that the rankings emphasize preserving amenities that are uniquely associated with actively farmed agricultural lands—which, relative to pastureland or forestland, may exacerbate environmental problems due to increased runoff from fertilizers and topsoil. However, these programs also require farmers to adopt water quality and soil conservation plans as a condition for easement sale, or give higher rank to applications with such plans in place (appendix table 4.2). Thus, the design of the programs is not necessarily inconsistent with preferences for environmental protection.

In the next section, we consider the broader set of rural land protection programs in these five States.

Case Studies of Several State Programs

The rural landscape, from which rural amenities derive, is shaped by policies applied by a variety of governmental bodies. Farmland preservation and other rural land-use policies are largely the prerogative of State and local governments.³⁴ Land use policy in each State has developed incrementally over time, often as a patchwork of laws. In addition, some laws that are important determinants of land use are not even considered “land-use” laws—their land-use impacts were not considered, or were considered to be secondary.

As a consequence, the number and combination of land-use policy instruments vary dramatically across States, with no States having identical arrays of laws. For example almost all States have implemented some form of use-value assessment, legislated right-to-farm laws, and designated State parks (AFT). Some States, such as North Dakota, have essentially no other laws that could be classified as land-use, farmland protection, or rural amenity protection laws. A few have complex arrays of laws that influence landowner decisions concerning land use through an interaction of

policies emanating from all levels of government (and nongovernment organizations, as well). Figure 9 provides a schematic to illustrate the complex system of programs and participants that influence rural land-use decisions.

The existence of these arrays of policy, complex or otherwise, means that the interpretation of demands for rural amenities provided by agricultural land must occur within the context of programs that act as substitutes or complements to farmland preservation programs. These include programs that protect parks, natural resource areas, and other areas that provide either direct public access or visual open space.

To put our analysis in perspective, our case studies of State land-use policies in five Northeastern States is designed to describe how the mosaic of programs and policies (implemented at various policy levels) forms a network that helps explain the focus of a State’s farmland protection programs. In particular, the overall purpose is to better understand which non-market amenities society was attempting to preserve (by saving land from urban-related development) when it implemented various rural land use programs. For instance, what can we learn concerning the relative emphasis farmland preservation programs place on preserving scenic landscapes, as compared to the emphasis on compact growth, or as compared to open space preservation?

Overview

It is useful to delineate four policy entities that are largely responsible for shaping the rural landscape and the supply and location of rural amenities in the United States: Federal Government, State government, local (city, county and township) governments, and private land trusts. Each of these policy entities takes individual policy actions that focus largely upon one of four sets of policy goals that influence the provision of rural amenities: open-space protection, farmland protection, compact urban growth, and other, less direct actions that nevertheless have direct implications for the rural landscape and rural amenities.³⁵

³⁴ The Federal Government has played a large role with respect to national parks, forests, and rangelands, but, as discussed in the box on pp 10-11, only a minor recent role with respect to farmland preservation.

³⁵ Some programs, such as Maryland’s Rural Legacy Program, have explicit goals of linking both other programs and the effects of those programs, attempting to achieve an aggregate effect that could not be achieved as the sum of the other programs.

Open-space protection:

Preservation of parks and playgrounds that permit public access.

Farmland protection:

Actions intended to preserve local agricultural activity, including both farmland and farmers.

Compact urban growth:

Encouragement of “smart growth” and other policies that, by targeting infrastructure investments to existing or planned urban areas, remove incentives to convert farm or open-space land to nonagricultural uses.

Other policies:

Policies such as water and air quality programs, tax structure, and transportation mode and siting decisions are also instrumental in determining land use, though often the impacts are unintended.

Our case studies encompass all four of these policy approaches. We consider State, local, and private initiatives. However, the analysis and discussion are weighted toward State policies that affect farmland protection and open-space protection, because it is with respect to these two issues that most policy action has taken place. Compact urban growth policies, for instance, are relatively new attempts at conserving rural lands and amenities, and only a few States have suites of laws that implement this approach.

To begin, one might examine the commonality among the State farmland preservation portfolios. As illustrated in table 4, all five States utilize programs involving differential assessment, agricultural conservation easements, and right-to-farm laws. Maryland, New Jersey, and Pennsylvania incorporate agricultural district programs into their portfolios. Further, all of the States’ preservation efforts are supplemented by TDR programs operated at a local level.

Summary of Maryland Case Study³⁶

Maryland encompasses nearly 8 million acres of land and surface water, including more than 6 million acres of land. Nearly 90 percent of the State’s 5.3 million people live within the Baltimore-Washington metropolitan area, and only about 7 percent live in nonmetro

areas.³⁷ In 1997, about 35 percent of its land was in farms, and the average farm size was 178 acres (9th smallest of the United States). In 1999, farming provided \$720 million (0.4 percent) in gross value added to the gross State product. The top five agricultural commodities in terms of the State’s total farm receipts in 2000 were: broilers (31 percent), greenhouse/nursery (18 percent), dairy (12 percent), soybeans (6 percent), and corn (5 percent). Maryland is also home to the Chesapeake Bay. The annual value of tourism and commercial activity related to the bay exceeds \$31 billion (http://www.dnr.state.md.us/rurallegacy/pos/pos_101.html). The forest products industry is the fifth largest industry in the State, and is the primary employer in western Maryland.

Until the 1960s, providing publicly accessible forestlands dominated the focus of government efforts to protect rural amenities. Efforts to acquire additional land for recreation and publicly accessible open space use followed in 1969, with citizen support for imposing a real estate transfer tax to fund the purchase of State parklands as well as the purchase and development of local parks and playgrounds through Program Open Space. The State also formed the Maryland Environmental Trust (MET), a public nonprofit organization, to accept donations of conservation easements. The MET’s goals include protecting farmland, forestland, wildlife habitat, waterfront, unique or rare areas, and historic sites. Thus the focus on the types of land, and rights to access, differ. Since the types of rural amenities likely to be preserved differ, these programs are not considered to be close substitutes with farmland preservation programs.

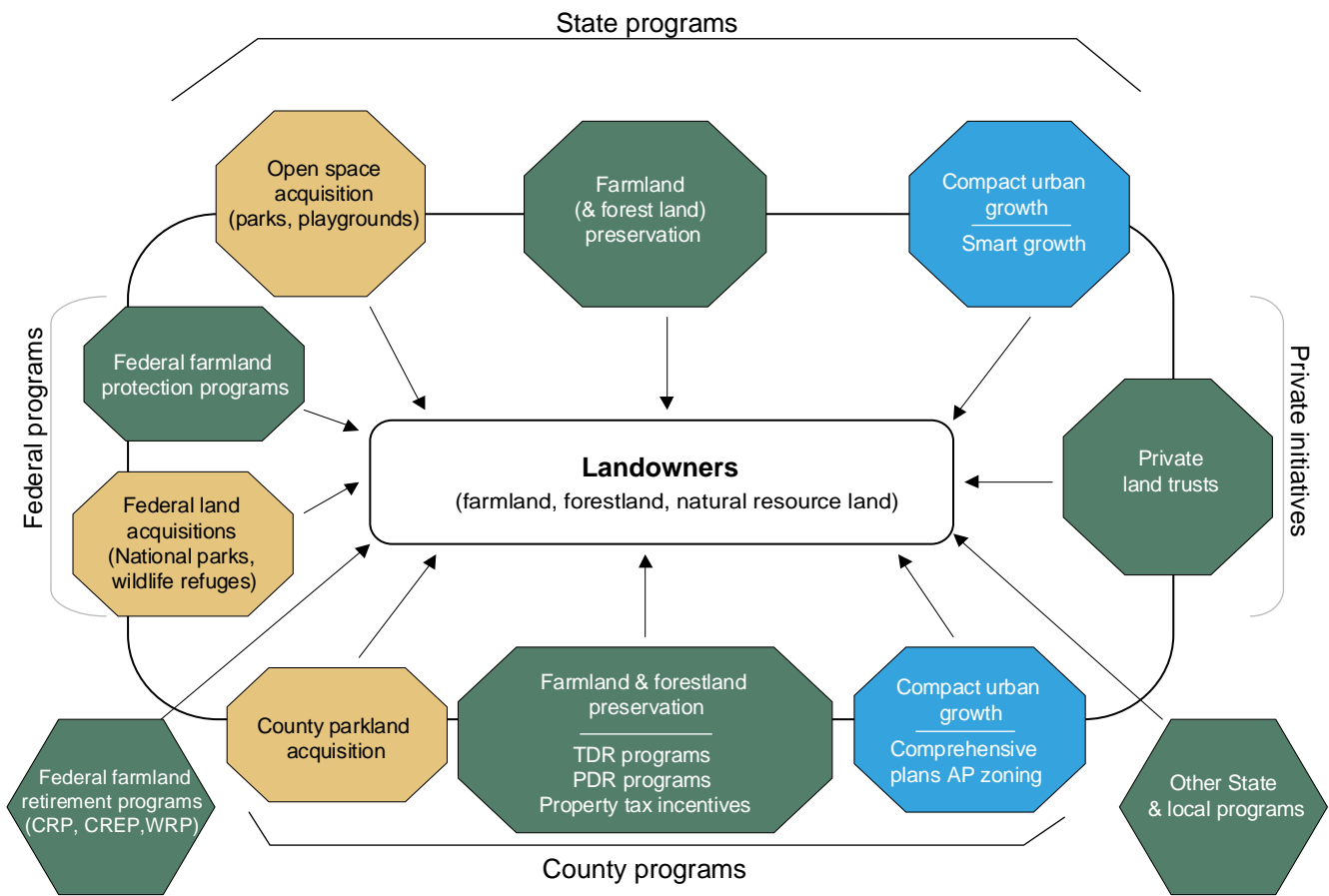
Maryland’s State-level efforts to preserve farmland have evolved since the early 1960s in response to growth pressures that were leading to rapid conversions of agricultural land. In the 1987–97 period alone, Maryland lost 17 percent of its farms, and about 13 percent of its 2.4 million acres of farmland (MDA 1999). Preservation efforts began with the adoption of differential tax assessment and a recapture of the tax break when farmland is converted. In response to continuing declines in the supply of farmland and given that farmland preservation was one of several competing goals in the MET’s mission, the State implemented its agricultural PDR program in 1978.

³⁶ The full case studies can be found in <http://www.ers.usda.gov/Briefing/LandUse/>

³⁷ Metropolitan areas are defined as populations of 50,000 or more people and the outlying suburbs. For more information see <http://www.ers.usda.gov/Briefing/Rural/Data/Metro.html>.

Figure 9

Rural land conservation: Programs and participants



Programs that influence use and disposition of private lands:

- Blue boxes indicate regulatory programs.
- Green boxes indicate voluntary-participation programs
- Gold boxes indicate programs involving outright sale of the land

Table 4—Farmland protection tools of five Northeastern States

State	Agricultural districts	Agricultural zoning	Differential assessment	PACE (PDR)	Right-to-farm	TDR	Growth management
Maryland	S, L	L	S	S, L	S	L	S
Massachusetts	S		S	S	S	L	
New Jersey	S		S	S, L	S	L	L
Pennsylvania	S	L	S	S, L	S	L	
Vermont			S	S	S	L	

S = State; L = local.

Source: AFT, *Saving Farmland*.

Through this program, easements on both farmland and forestland are acquired.

Some counties have four or more alternatives for preserving productive farmland, including TDR, a county-initiated agricultural PDR, MET, a State-funded land preservation fund (MALPF), and Rural Legacy PDR programs. In addition, over 40 land trusts operate and focus their operations within a single county. Although there is some substitutability between farm preservation programs (such as MET, MALPF, and the various county programs), the goals differ between at least some of the programs. The State and county farmland preservation programs seek to preserve a local viable agricultural industry (in addition to providing open space), while MET does not share this emphasis. Across counties, the goals and the patterns of preservation can differ markedly, with some counties emphasizing preservation in relatively condensed clusters while others allow preservation to occur on parcels interspersed with development. Several local land trusts act to speed the timing of preservation but otherwise complement existing government agricultural PDR programs.

State-level farmland preservation efforts have recently evolved to focus on permanently protecting a wider variety of resources in larger, more contiguous tracts of land through its Rural Legacy Program. One of the goals of this new program, which was established in 1998, is to systematically link new protected open space with existing State, county, and local park systems and with other existing protected environmental areas to create adjoining networks of ecologically important land. The Rural Legacy Program was implemented as part of the State's "smart growth" legislation, which acts to preserve all undeveloped lands by limiting State funding for infrastructure projects to existing neighborhoods and to planned growth areas.

In 1997, about 19 percent of the State was developed and about 8 percent of non-urban lands were protected, publicly owned open space. In addition, about 192,000 acres (3 percent of the State) were owned or protected by county and municipal programs.³⁸ Through 2001, the State agricultural PDR program had preserved 186,000 acres (0.04 acre per capita) at a cost of \$232 million (AFT 2002). Also as

³⁸ Data on land owned and protected by county and municipalities were derived by ERS from 1997 NRI data, <http://www.nhq.nrcs.usda.gov/NRI>

of 2001, the MET had protected over 85,000 acres. As of January 2002, over 14,000 acres had been preserved through the Rural Legacy Program.

Summary of Massachusetts Case Study

Massachusetts covers 5.0 million acres, and only 2 percent of its 6.3 million residents live in nonmetropolitan areas (<http://www.ers.usda.gov/StateFacts/MA.HTM>). Massachusetts has steadily been losing farmland throughout the 20th century, with about 20 percent of its agricultural land lost since the 1970s. In 1997, the State had about 500,000 acres (10 percent of land area) in farms, and the Nation's 3rd smallest average farm size—93 acres. The greenhouse/nursery industry and the dairy industry accounted for nearly 50 percent of the State's farm receipts in 2000, contributing 34 percent and 14 percent, respectively.

Although farming provides a very small percentage—0.1 percent (\$222 million) in 1999—in gross value added to the gross State product, the rate of farmland loss has prompted a number of responses at the State and local level. For agricultural lands, two measures are primarily used as protection tools: differential tax assessment, and a purchase of development rights which is known locally as the Agricultural Preservation Restriction (APR) program. Both of these were implemented in the late 1970s, with differential tax assessment now applied to about 250,000 acres, and the APR program protecting about 47,000 acres (about 10 percent of Massachusetts farmland).³⁹

The Massachusetts agricultural PDR program (the APR program) is notable in its lack of a strong set of formal rules for determining what offers to accept. Nevertheless, it appears that agricultural viability is the most important criterion, with less weight given to other environmental and open space concerns. PDR grants are also broadly distributed, with almost a third of Massachusetts cities and townships having some PDR lands.⁴⁰

In 1997, about 30 percent of the State was developed and about 8 percent of non-urban lands (0.06 acre per capita) were protected, publicly owned open space. In addition, about 309,000 acres (6 percent of the State)

³⁹ Source: Mass Department of Food and Agriculture.

⁴⁰ In Massachusetts, counties supply a relatively limited set of governmental functions. Hence, local land use programs typically are undertaken by cities and townships, or by regional authorities (such as the Boston area Metropolitan District Commission).

were owned or protected by county and municipal programs. The State agricultural PDR program had protected about 47,000 acres (about 0.01 acre per capita) at a cost of \$117 million through 2001 (AFT 2002). Massachusetts has preserved the least amount of land per capita of the five States reviewed here. In addition, a widespread network of private land trusts protects about 150,000 acres of mostly non-farmland—about three times as much land as farmland preserved through the State’s PDR program.⁴¹ Recently, the State Department of Fisheries and Wildlife began purchasing easements on land both to limit development and to provide public access.

Summary of New Jersey Case Study

With 8 million people living on 4.7 million acres of land, New Jersey is the most densely populated State in the Nation. It is sufficiently dense that the entire State falls within metropolitan areas. It also has more roads per square mile than any other State, and has lost more than half of its farmland since the 1950s. As of 1997, about 800,000 acres were in farms, and the State had the Nation’s second smallest average farm size at 91 acres. New Jersey ranks in the top three States for blueberry and cranberry production. The greenhouse/nursery industry contributes the greatest percentage of the State’s total farm receipts (36 percent), followed by blueberries, dairy, chicken eggs, and peaches (4 percent, 4 percent, 3 percent, and 3 percent, respectively). However, farming contributed only 0.1 percent in value added to gross State product in 1999.

Since 1961, voters have approved nine bond issues and preserved 870 thousand acres of open space. As a general guideline, New Jersey seeks to meet the following open space goals: 3 percent of “developed and developable acres” at the municipal level, 7 percent at the county level, 10 percent at the State level, and 4 percent at the Federal level.

The preservation of open space and the provision of rural amenities in New Jersey was substantially increased with the 1999 passage of the Garden State Preservation Trust Act. This Act dedicates \$98 million per year for 10 years, with a goal of preserving 1 million additional acres of open space. Its three basic programs are open space preservation, farmland preservation, and historic preservation, with 56 percent, 38 percent, and 6 percent of funding allocated

to the programs, respectively. The primary goal of the open space program is to provide opportunities for active and passive recreation. Secondary goals are to reduce sprawl and congestion, and to protect environmental quality (particularly water quality). The focus of the farmland preservation program is to preserve agricultural viability. The Garden State Preservation Trust Act’s stated ethic is “*Places to play, clean water resources, wildlife habitat, and farm fresh food to eat.*”

New Jersey also is home to the Pinelands area, which represents the largest block of open space in the mid-Atlantic. The Pinelands contains a huge reservoir of very pure water. The Pinelands is highly valued as an aesthetic and recreational asset for the State, and the region is rich in both Native American and colonial history. The aesthetic, recreational and historic amenities contribute both to the quality of life in New Jersey and to a healthy tourism industry. In 1978 Congress created the 1.1-million-acre Pinelands National Reserve. About a third of the Pinelands area is now publicly owned. Development is heavily restricted in the core of the Pinelands (the Preservation Area), and development pressure is channeled into existing urban areas on the fringes of the Pinelands (called Regional Growth Areas). To compensate landowners for the loss of development rights, the State established the Pinelands Development Credit program in 1985. This is a standard TDR program whereby Pinelands landowners are given development credits which they can sell on the open market to developers, who can increase development density in the Regional Growth Areas.

In 1997, about 36 percent of the State was developed, and about 12 percent of non-urban lands was protected, publicly owned open space. Approximately 870,000 acres (0.09 acre per capita) were protected through State open space programs. In addition, about 294,000 acres (6 percent of the State) were owned or protected by county and municipal programs. As of 2001, about 71,000 acres (0.01 acres per capita) were protected through the State’s agricultural PDR program at a cost of \$197 million (AFT 2002). As of 1998, private land trusts had protected over 90,000 acres in New Jersey. Of these 90,000 acres, more than 60,000 had been transferred to government agencies.

Summary of Pennsylvania Case Study

Pennsylvania’s population of over 12.2 million persons resides on a land area of nearly 29 million acres. About 15 percent of the population live in nonmetro-

⁴¹ Source: Jennifer Steel, Massachusetts Audubon Society.

politan areas. Roughly 25 percent (7.2 million acres) of the State's area is farmland, of which 5 million, or 70 percent is classified as cropland. In 1997 the State had the 7th smallest average farm size at 158 acres. The top five commodities in terms of total State farm receipts in 2000 were: dairy (37 percent), cattle and calves (9 percent), mushrooms/agaricus (10 percent), greenhouse/nursery (7 percent), and chicken eggs (7 percent). In 1999, farm gross value added comprised only 0.5 percent of gross State product.

In 1895, the State began purchasing lands for State Forest Reservations, some parts of which later became State parks. The focus of early efforts was preservation and protection of rare, scenic, historic, and natural areas. Often, the initial impetus for park formation was to provide health benefits (fresh-air cure of tuberculosis)⁴² and motorist camping sites. Around 1955, parks became a major priority, with a goal of creating a State park within 25 miles of every citizen. By 2000, 116 parks had been created, encompassing 277,000 acres. The State also has 2.1 million acres in State forestlands.

The slowing of park development that occurred near 1970 signaled a shift toward a farmland preservation focus. In 1974, Pennsylvania's "Clean and Green" law instituted use-value assessment of farmland. Agricultural district laws were put in place in 1981, followed by right-to-farm legislation in 1982. Then, the agricultural district law was amended in 1988 to more clearly define an "agricultural security area" and to create a joint county-State conservation easement purchase program.

The State-level Pennsylvania Farmland Preservation Program purchases development rights (easements) from owners of farmland. Since its creation in 1989 (and the dedication of a portion of cigarette tax revenues in 1993), the program has protected over 1,400 farms and 186,000 acres, at a cost of approximately \$2,000 per acre. Individual counties also provide funding in some cases. The Purchase of Agricultural Conservation Easements legislation suggests that the program is aimed at limiting urban sprawl, protecting productive farmland and maintaining farming as a viable economic activity.

⁴² Source: "Pennsylvania State Parks—The Early Years" <http://www.dcnr.state.pa.us/stateparks/history/historyearlyyears.html>

Both the counties and the State share in the decision of which land parcels are accepted into the program. The State sets broad criteria for approval, which can be modified by the individual county. Counties submit applications for easement purchases to the State Agricultural Land Preservation Board for approval. The four primary criteria are:

1. Land Evaluation: Primarily based on soil productivity (weighting range: 40 percent–70 percent).
2. Development Potential: Measures the development pressure and is based on the extent of non-agricultural use in the area, zoning, amount of road frontage and proximity to public sewers and water services (weighting range: 10 percent–40 percent).
3. Farmland Potential: Measures agricultural amenities such as farm size, product sales, stewardship, scenic qualities, and land use (weighting range: 10 percent–40 percent).
4. Clustering Potential: Measures the ability of the land parcel to make up part of a larger non-developed area. Based on factors such as proximity to other farms with easements or applying for easements or percentage of land adjacent to the farm that is in an agricultural security area (weighting range: 10 percent–40 percent).

In 1997, about 7 percent of the State was developed, while about 6 percent of non-urban lands (0.13 acre per capita) were protected, publicly owned open space. In addition, about 481,000 acres (about 2 percent of the State) were owned or protected by counties and municipalities. Through 2001, the State had preserved about 186,000 acres (0.02 acre per capita) through its agricultural PDR program at a cost of \$377 million (AFT 2002). Approximately 70 land trusts are active in Pennsylvania and have preserved 348,000 acres. The Pennsylvania Land Trust Association coordinates efforts by individual land trusts.

Summary of Vermont Case Study

Vermont contains approximately 5.9 million acres of land with a population of approximately 600,000. Nearly 67 percent of these people live in non-metropolitan areas. As of 1997, about 1.3 million acres of this land was farmed. Since 1950, Vermont has lost 65 percent of its agricultural land base. That loss is of concern to Vermont citizens in part because of the large role that tourism plays in the State's economy.

Though Vermont's agriculture contributes just \$500 million in farm receipts annually to the State's economy and contributes about 1.6 percent to gross State product, it ranks third behind manufacturing and tourism. The scenic beauty of Vermont's agricultural landscape plays a key role in attracting tourists. In fact, Vermont is one of the few States to explicitly promote its agriculture as a tourist attraction, as exemplified by its "Vermont, a Farm Product" campaign. The dairy and cattle/calves industries contributed 74 percent and 10 percent of the State's total farm receipts, respectively, in 2000. At 217 acres, Vermont had the largest average farm size in 1997 of the five States comprising the case study, but had the 17th smallest farm size of all U.S. States.

The loss of farmland and open space has prompted the State, over several decades, to enact a portfolio of legislation to counter that trend. Early efforts to maintain rural land in agriculture included zoning and planning. Comprehensive growth management, differential assessment, and right-to-farm laws followed these efforts. The differential assessment law in particular, mentioned the "maintenance of Vermont's productive agricultural and forest land...prevent[ing] accelerated conversion...preservation and enhancement of Vermont's scenic natural resources...and ...orderly growth." In a similar vein, the right-to-farm legislation mentions agricultural lands as "unique and irreplaceable" resources contributing to the State's economy, "preserv[ing] the landscape and environmental resources," and "increas[ing] tourism." The Vermont Housing and Conservation Board (VHCB) was created with authority to fund purchase of conservation easements on farmland, forestland, and other undeveloped land. The VHCB does not buy easements itself, but channels funds to State agencies, municipalities, and nonprofit land trusts, which leverage the VHCB matching funds through landowner donations, private donation, or other public funds.

The VHCB was established to administer the Vermont Housing and Conservation Trust, whose objectives include not just the "retention of agricultural land for agricultural use," but also the protection of wildlife habitat, natural areas, historic properties, and outdoor public recreational activity. A unique element of the Vermont program is the explicit balancing of land preservation with its potential effects on the cost of housing, including a goal of "the preservation, rehabil-

itation or development of residential dwellings units which are affordable to low-income citizens." Agricultural lands conserved must be "actively farmed" and must contribute to existence of "a viable farm unit." In ranking farmland conservation projects, the VHCB gives highest priority to parcels with larger amounts of prime land with potential for diversified agricultural use, followed by high likelihood of continued farming, threat of development, and contribution to the protection of already preserved farms. Farms with appropriate farm-related structures, existing investments in soil and water conservation, and sound resource management practices receive the next levels of priority, as indicators of long-term agricultural viability and landowner commitment.

In addition to farmland, VHCB provides funds to protect lands that provide wildlife habitat and important natural features to support biological diversity, rare, threatened, or endangered communities, plants, or wildlife, or unusual and important geographical features. Availability of public access, once the area is protected, receives highest priority when ranking such lands. The State also attempts to accomplish the legislatively mandated mission to fund "activities which will encourage or assist ... the protection of areas suited for outdoor public recreational activities."

In 1997, about 2 percent of the State was developed and about 4 percent of non-urban lands were protected, publicly owned open space. In addition, about 101,000 acres (about 2 percent of the State) were owned or protected by counties and municipalities.⁴³ As of 2001, about 88,000 acres (0.14 acre per capita) were protected through the State's agricultural PDR program at a cost of \$44 million (AFT 2002). Vermont has preserved the most acres per capita in its State open space (0.79 acre) and farmland preservation (0.14 acre) programs of the five States reviewed here. The Vermont Land Trust, a private conservation organization, has helped protect about 50,000 acres of farmland and about 50,000 acres of natural areas with scenic, recreational, and historic values (Woods et al. 2000).

⁴³ More recent data from the University of Vermont's Conserved Lands Database (<http://snr.uvm.edu/sal/vtcons.html>) indicates that, as of April 2000, approximately 297,000 acres of private land were protected by conservation easement. This substantial increase, which is partially driven by a few large acquisitions of forest land, suggests the growing importance of rural land preservation in Vermont. <http://www.vlt.org/publications.html>

Lessons Learned

The review of ranking criteria and the case studies of land use policies are suggestive of which rural amenities matter, even though what matters cannot always be easily discerned. They also indicate that farmland preservation exists within a broader context of rural land preservation programs, such as programs dedicated to forestland preservation, maintaining open space, and protection of unique ecosystems. However, farmland has a unique role, a role that we summarize in the following findings:

Lesson 1: Though agricultural viability is the focus of farmland protection programs, that goal tells us little about the underlying amenities preferred.

It is clear that an important goal of nearly all farmland protection programs is to enhance or maintain the long-term viability of urban-edge agriculture. It is less clear why these laws are so intent on preserving agricultural viability specific to their localities. For example, agricultural districts, differential assessment, right-to-farm, and purchase of development rights all might be considered as programs that individually and collectively contribute to the maintenance of a “viable” local agriculture. The benefits farms receive from participation in these programs contribute to the overall profitability of these farms and thus increase their viability. While these laws, however, can reasonably be considered to contribute to the length of time that agriculture remains viable, they do not tell us much about “why” the public wants agriculture to remain viable. In other words, the “clear purpose” of these laws does not tell us much about which rural amenities (or other outputs) are most important. In a sense, they may simply be stating the necessary conditions (that farms stay in business) for the provision of agriculturally related amenities.

Are there provisions within these laws, though, that indicate an attempt by policymakers to maintain particular rural amenities, rather than simply to maintain the viability of active agriculture? Though one cannot unequivocally discern which individual public goods the public seeks, some information can be garnered by eligibility and program participation requirements, requirements that can be interpreted as evidence of proactive measures taken by legislatures to enhance or maintain specific amenities. For example:

- ◆ Many agricultural district and PDR programs give priority to farms using best management practices or require participants to adopt conservation plans. These requirements seem to be clear evidence of legislative intent to enhance or maintain water quality, especially given that such requirements do not contribute to agricultural viability.⁴⁴
- ◆ It is doubtful that legislators, and program administrators, would include significant rules regarding farm size, soil quality, or annual farm income as requirements if the intent was only to slow or prevent development (i.e., maintain open space) rather than to maintain active agriculture. An aesthetic such as that generated by a farm landscape can be achieved only by maintenance of active farming; open space, however, can be provided by a variety of undeveloped land types. Such rules imply a desire to maintain agricultural-specific amenities.
- ◆ If local food security were a primary concern, program dollars could be targeted to producers of edible farm products and withheld from such farm enterprises as horticultural crops and riding stables. In reality, laws in most of the five States studied specifically include such enterprises. These enterprises, however, may contribute to the critical mass of farms necessary to maintain the viability of many farm support businesses.
- ◆ In Maryland, woodland as well as farmland is protected through agricultural districts and the State’s PDR program. Although this implies that rural amenities provided by nonagricultural lands are sought for protection, one of the main reasons for including woodland was to facilitate preservation in counties where the forest product industry is important.
- ◆ In many States with an agricultural district program, landowners file a petition to form an agricultural district. Given that the formation of these districts is voluntary, it follows that the geographic distribution of lands in these districts will be determined at least partly by the characteristics of the landowners. Implementation under this arrangement does not especially enhance wildlife, which most biologists believe is protected most effectively by large, contiguous blocks of land linked by undeveloped corridors.

⁴⁴ One can argue that these practices are important for enhancing and protecting long-term agricultural viability. While this may be true, the more immediate impacts are generally off-farm (viz., reduced sedimentation in rural waterways).

◆ Agricultural district requirements that the land be “actively devoted to agricultural use” at the time of petition have implications for the amenities sought. This requirement would not be consistent with a desire simply for open space (in the sense of no development and no public access) since an “open space” amenity could be obtained without an “agricultural use” provision.

Overall, farmland protection programs are oriented toward preserving outputs related to agriculture, and are most attentive to rural amenities that are associated with active cropland. Other rural amenities are also important, especially when they can be provided simultaneously with active agriculture.

Lesson 2: Critical mass and the spatial pattern of permanent protection are often cited.

Underlying all of these programs is the premise that for active farming to remain viable in the long-term, a “critical mass” of farms and farmland must be maintained so that the farm support infrastructure (input suppliers and markets) can remain economically viable.⁴⁵ The concern is that loss of local farm support businesses will increase the cost of farm operations, inevitably reducing the viability of active local farming. If sufficient land can be protected, under conditions that are perceived to provide long-term preservation, then another detrimental effect of urbanization on the local farm industry can be reversed, namely the “impermanence syndrome.”

Although all State agricultural PDR programs articulate this goal, it is less clear that actual program designs assure that the lands are preserved in relatively close proximity. For instance, the Maryland program allocates money to easement purchases in many counties and relies on a “discount” ranking system for parcel selection. While this approach increases the number of acres that can be preserved for a given budget outlay, by design it distributes the acres preserved over a wide area—perhaps in a pattern that does not contribute to preserving land in close enough proximity to retain input suppliers. Programs that distribute funds geographically across jurisdictions using other means (such as observed in Massachusetts)

⁴⁵ Maryland and New Jersey explicitly mention this concern. For example, the Maryland agricultural district law lists its intention “to preserve the minimum number of acres in a given district that may promote the continued availability of agricultural suppliers and markets for agricultural goods.”

or those that put caps on per acre easement payments may suffer the same drawback.

In this regard, a combined use of downzoning and TDR programs has interesting characteristics. Though not often used and difficult to implement, these programs may effectively preserve much larger acreages. TDR programs are usually implemented in conjunction with downzoning, where large acreages are downzoned to low residential density levels similar to those achieved by agricultural PDR programs (even though the development rights may not have yet been sold by many landowners). Existing landowners in the downzoned area are granted TDRs based on pre-downzoning densities. When TDRs are then sold, the landowner is effectively compensated for land value that otherwise is lost due to the downzoning’s reduction in development potential of the land. Because the downzoning is applied to an entire “sending” area, TDRs have the potential for ultimately preserving relatively contiguous blocks of farmland.

Lesson 3: Permanent preservation does not mean no development of protected farmland.

Agricultural PDR programs in all States allow some level of residential development, but usually no commercial or industrial development. Such an outcome can have significant implications for the amenities that are preserved through these programs, such as the resulting “scenic views” and maintaining “cultural heritage.” Though the degree of residential development is usually rationalized and implemented as necessary for continuation of active farming (i.e., to allow farm operators and their families the ability to live on the farm and to ensure landowner participation), the effect can be low-density residential development similar to that achieved through large-lot zoning.

For example, “child lot” provisions enable owners of preserved farms to develop a limited number of lots as residences for their children. However, once the “child” lots are developed, there are few restrictions on transfers of the lots to nonfarm-related residents through sale or lease. In Maryland, for example, landowners selling development rights under the State’s primary farmland preservation program (MALPF) can reserve one lot (not to exceed 1 acre each) for each child, up to a maximum of 10 as long as the total does not exceed 1 lot per 20 acres. Housing may be constructed for tenants fully engaged in operation of the farm, but may not exceed one

tenant house per 100 acres. There is often a substantial economic incentive to develop many of these lots, despite clustering restrictions and other restrictions that attempt to prevent fragmentation of the landscape.

Almost since their inception, programs to purchase development rights programs have faced issues surrounding the conversion of preserved parcels to residential “estates.” Persons with sufficient wealth purchase selected preserved parcels, and then, using provisions permitting the presence of a landowner dwelling, have constructed “mansions.” Often, the farmland associated with the preserved parcel is no longer farmed by the new landowner, nor does the new landowner make the farmland available for rent to active farm operators. In essence, the new landowner obtains land for his large-lot “mansion” at agricultural use value and does not pay the “development value” that would be required to obtain a similar lot that had not been preserved. When this happens, it effectively precludes the land from ever being farmed again, since most farmers will not have sufficient financial capital to purchase land for farming with significant non-farm improvements to the house and landscape. In such cases, taxpayer money was used to retain land in large-lot residential uses.

A recent study that empirically compared the sales prices of preserved and unpreserved farms found no significant difference between them (Nickerson and Lynch 2000). The authors speculate that this finding, which was contrary to the expectation that preserved farms would sell for significantly less due to the restrictions on development potential, may be due in part to the purchase of some preserved lands by “hobby” farmers, who can afford to pay more than the agricultural income stream for the opportunity to live on a farm near an urban area.

Does the existence of this “loophole” mean that the public may not care too much about the “agricultural activity,” so long as open space is maintained? Or is agricultural use sufficient, even if practiced by individuals for whom farming is just a hobby? Or will this problem lead to the demise of PDR programs or a drastic restructuring of requirements? Though some PDR programs, such as Massachusetts, have taken steps to discourage some nonagricultural uses, the issue remains largely unresolved.

Lesson 4: The emphasis on high-quality cropland seen in most farmland protection programs seems

inconsistent with broader goals revealed in other analyses.

As evidenced by the above discussion of the five Northeastern States, the primary focus of farmland protection programs is to ensure the viability of an active agricultural industry in local communities. Implementation of this goal within many State and county PDR programs (as discussed earlier) is achieved by parcel ranking schemes or qualifying criteria that heavily favor high-quality cropland or (similarly) lands with the highest soil quality.⁴⁶ The premise underlying this strategy is that farms composed of high-quality farmland are the most likely to remain viable in the long term.⁴⁷

A question arises as to whether the bundle of rural amenities generated by the set of parcels preserved under this implementation strategy matches the public’s preferences for the rural amenity bundle. First, the characteristics of the parcels preserved under this strategy, and thus the bundle of rural amenities generated, will generally differ from the parcel characteristics and amenities derived from a strategy that preserves parcels representative of agriculture more generally—even if both strategies achieve the same goal of maintaining farm viability. Whether this is good or bad is an open question. However, evidence concerning public preferences gathered from other sources (as noted in section earlier) seems to indicate that in at least some parts of the country, the public may prefer a wider bundle of amenities. This bundle is less heavily weighted toward amenities derived from “active” agriculture and more heavily weighted toward open space (active agriculture is a sufficient but not necessary condition) and environmental services. This farm preservation strategy may be at least partially explained by the significance of agriculture in a particular State’s economy (see Lesson 6).

In addition to the survey evidence, the review of legislative purpose clauses seems to indicate that the public is

⁴⁶ As discussed in greater detail earlier, the State PDR program in Vermont does not use this strategy.

⁴⁷ An alternative hypothesis is that measures of agricultural productivity, or of soil quality, are predominant in farmland protection programs simply because they are readily available, and because they are technically and scientifically based and therefore defensible as an objective classification system. Thus, even though these measures may have little to do with societal goals, States and localities may use these measures rather than coming up with a classification scheme that could be subject to court challenges.

simultaneously interested in a broad array of rural amenities. While the amenities that are unique to an active agricultural industry are important, other amenities that depend less on “active agriculture” are also important. This is particularly so in States that have implemented the most intensive farmland protection portfolios. In other words, in many cases, legislative intent seems to be concerned with a broader set of rural amenities than indicated by program implementation.

The heavy emphasis on cropland has several implications for the “mix” of rural amenities that the set of preserved parcels will generate in aggregate. First, in most cases, fewer acres of cropland “open space” can be purchased with a given budget relative to grazing land or woodland “open space.”⁴⁸ Yet, both cropland and grazing or woodlands, provide equal amounts of “open space” in the sense that they equally contribute to an absence of development.

However, cropland often yields a less desirable set of environmental services than does grazing land or forested land. Soil erosion, chemical run-off, leaching of chemicals into groundwater, and flooding are more commonly associated with cropland than with either grazing land or forest land (Hanley). This distinction is important given the myriad of other governmental programs directed at improving the off-site environmental effects of crop production. With the heavy emphasis on the selection of cropland parcels that seem to work at cross-purposes with these programs, PDR programs often require soil conservation and water quality plans be implemented as a condition for participation.

A further consideration is the dissimilarity between the characteristics of the agriculture likely to be preserved through agricultural PDR programs and those targeted for preservation through most other farmland protection programs. The legislation enabling most other farmland protection programs sets goals of preserving the viability of the agricultural or farming industry or economy. The legislation then proceeds to define very

⁴⁸ Land used for crop production is typically cleared, level, and well drained. In contrast, grazing and woodland often have steep slopes, standing trees, and rocky soils. These limitations both reduce its cropland value and increase the cost of developing it. Consequently, the price that a preservation agency must pay to purchase the development rights to an acre of cropland will often be somewhat higher than the price for development rights to less productive farmland, *ceteris paribus*.

broad types of agricultural land uses or farm enterprises as qualifying for the programs. The legislation often defines agricultural land to include such diverse land uses as cropland, forest land, woodland, horticulture, silviculture, and aquaculture. For instance, Maryland’s agricultural district law states that “any farm use of land is permitted.” Massachusetts defines land in agricultural use as “when primarily used in raising animals, including . . . horses, bees, fur-bearing, for the purpose of selling such animals or a product derived from such animals; . . .” A parallel definition for horticultural use states “when primarily and directly used in raising fruits, vegetables, . . .flowers, sod, trees, nursery or greenhouse products, and ornamental plants and shrubs for the purpose of selling.” Agricultural development areas in New Jersey “may produce agricultural and horticultural products, trees and forest products, livestock, and poultry and commodities as described in SIC codes for agriculture, forestry, fishing, and trapping.” Pennsylvania adds “aquatic plants and animals.” This suggests that within the farmland preservation program portfolio, the characteristics preserved through various programs are not always close substitutes.

Lesson 5: Suites of farmland protection laws evolve over time.

Some variation exists with respect to the temporal pattern by which these programs were implemented, variation that may be a function of the anticipated interaction of the programs. All five States first employed the use of differential property tax assessment as a means of slowing conversion of agricultural land to developed uses. Maryland was the first State in the Nation to use this tool when it implemented its differential property tax assessment laws in 1956 (AFT 1997). Pennsylvania and Vermont adopted programs in a sequential manner. Pennsylvania first initiated agricultural protection zoning, then followed with agricultural districts, right-to-farm legislation and a PDR program. Vermont adopted right-to-farm legislation followed by a PDR program. However, not all States enacted additional measures in a sequential order from least permanent to most permanent. For example, Maryland introduced the use of agricultural districts concurrently with its State PDR program, and some counties simultaneously implemented agricultural zoning. New Jersey enacted the same programs and also passed right-to-farm laws at the same time. Massachusetts implemented its State PDR program and right-to-farm laws within a 2-year period.

Often, these laws are interlinked. For example, agricultural districts, which are voluntary, and agricultural zoning, which is regulatory, usually offer landowners a suite of benefits. These can include additional property tax credits on top of relief provided by differential tax assessment, additional protection from disruption of farming operations through local government use of eminent domain or annexation procedures, and (perhaps most importantly) isolation of farming activities from conflict with interspersed nonagricultural land uses.

Often, to qualify for payments (or other incentives) from particular programs, the landowner must abide by regulations or restrictions on land use or land use changes. For instance, to obtain the protections provided by an agricultural district, landowners must agree to refrain from developing for a specified time. This is for a limited time span, usually 5 to 10 years; it is not permanent. In some cases, landowners must actually agree to retain the land in agricultural use, a condition that is not achievable with the more permanent preservation approach of PDR. With PDRs, the easement does not require landowner to do anything, but instead requires the landowner not to do something—namely, not to develop.

Lesson 6: The design of a State's suite of farmland protection programs depends on the State's specific circumstances.

The case studies revealed that differences in circumstances among States contribute to differences in the implementation and design of farmland protection programs. For example, an insignificant amount of land in Vermont—2 percent—was devoted to urban uses in 1997, and little land that is developed is prime farmland. Yet it has adopted an agricultural PDR program and has preserved more farmland per capita (0.14 acres per capita) than the other four States we reviewed. This may be explained by agriculture's contribution to the State's economy. It is the third most important industry (in terms of receipts) in Vermont, and the agricultural landscape plays a uniquely important role in the State's tourism industry. The agricultural landscape's contribution to tourism in this State may also explain Vermont's unique desire (amongst the five States we reviewed) to first preserve farms with the potential for diversified agricultural uses. Also, it is not surprising to note that an eligibility requirement in Vermont's PDR program is that the land be actively farmed. In contrast, other States

require only that a parcel have sufficiently rich soils to support farming rather than a "use" requirement. Another example is that Maryland is unique among the case study states in that its State agricultural PDR program also seeks to protect woodland parcels, which typically do not have prime soils for cropping. This may be explained by the prevalence of tree farms in certain Maryland counties. These farms provide their own set of amenities and environmental services—values that may not be reflected in land prices.

Lesson 7: Other rural land protection programs substitute for, and complement, farmland protection programs.

Farmland protection programs are conceived, enacted, and implemented within a broad array of policies affecting a variety of rural land uses. Some of these other rural land uses may generate amenities that can substitute for the amenities generated by farmland. For instance, forestland provides aesthetic landscapes, open space, and income contributions to rural economies. Parks also provide aesthetic landscapes and open space.

Alternatively, protected forests and parks are not perfect substitutes for farmland in the generation of amenities. For instance, forestland may not provide the same sense of agrarian cultural heritage as farmland. And, forest landscapes, though scenic, do not provide the same aesthetic qualities as actively farmed fields. Similar arguments can be made concerning parks. On the other hand, parks and forests usually provide public access to outdoor recreation,⁴⁹ an amenity less frequently associated with preserved farmland.⁵⁰

Thus, since they can either substitute or complement the rural amenities provided by farmland, the location and extent of the acreage devoted to nonfarm rural land protection programs may influence the existence and implementation of farmland preservation programs. For example, Massachusetts' nonfarm open space programs (public and private) have protected approximately 16 percent of the land base—the largest percentage among the five case study States. The

⁴⁹ For example, many privately owned forests, such as those of northern Maine, have a tradition of free or inexpensive public access (<http://www.northmainewoods.org/>).

⁵⁰ Farmland can provide outdoor recreational opportunities, such as hunting. However, this is often provided through private leasing, rather than through unrestricted public access (Lewandrowski and Ingram).

funding priorities given to other rural land protection programs may be one reason Massachusetts spends the least per capita on its PDR program (\$1.26 per capita versus \$3.78 - \$4.43 per capita for the other four States studied).

The relative importance of private land trusts in preserving rural land uses can also influence farmland preservation programs. In Pennsylvania and Massachusetts, private land trusts have preserved two and three times the total number of acres that the State agricultural PDR programs have preserved, respectively. In the other States studied here, private land

trusts have also preserved significant amounts of rural land. In general, farmland is but one of several types of rural land preserved by these trusts.

The case studies reveal the importance of considering the existence, funding, and preservation priorities of these other rural land programs, as well as the role of farming in a State's economy, when deciphering public preferences for rural amenities via farmland preservation programs. If ignored, one may incorrectly conclude that farmland preservation programs are insufficiently (or overly) focused on amenities specifically generated by an agricultural landscape.