

A NATIONAL VIEW OF AGRICULTURAL
EASEMENT PROGRAMS:
EASEMENTS AND LOCAL PLANNING —
REPORT 3

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Executive Summary

When agricultural easement programs and local planning policies work together in a mutually-reinforcing fashion, they advance the cause of effective farmland protection—as well as the related public goals of efficient land use, wise use of funds and political accountability. Examining the planning connections of 46 easement programs in 15 states, this report is based on the perceptions knowledgeable persons collected in extensive phone interviews and on more objective information from other sources.

Organizational and state government frameworks influence local relationships. Most sample easement programs are housed in organizations separate from local government planning, thus limiting coordination, although this is sometimes offset by funding, technical assistance and other forms of cooperation. State laws determine the location of local planning authority.

As to the effectiveness of specific planning policies and regulations, whether operating alone or in connection with easement activities, the study finds:

- Agricultural zoning is the most common regulatory tool for protecting farmland, but less than a third of the programs operate in communities with relatively “restrictive” zoning standards—defined by large minimum parcel size (25 acres or more) and limited allowed uses. Relatively “permissive” or weak zoning prevails in most areas.
- As an alternative to conventional zoning in some jurisdictions, cluster development is generally not effective as a farmland protection tool when its use is optional rather than mandatory.
- Differences among communities in the restrictiveness of agricultural zoning and other land use regulations are primarily due to local factors—public support, landowner influence, the political will of elected officials, etc.—as seen in downzoning and other planning changes over time.
- Permissive agricultural zoning serves more to accommodate rural residential development than to protect productive and profitable farms.
- Urban growth boundaries—when they are long term, limit the expansion of urban services, and are enforceable—complement the strategic location of easements. However, such boundaries do little to control scattered and low-density growth.
- Other potentially effective land use regulations include Transfer of Development Rights (TDR) and development mitigation.
- Local governments in about a dozen communities served by agricultural easement programs in the sample have exemplary farmland protection policies—marked in most cases by the combination of two or more sets of restrictive arrangements.

The benefits of complementary relations flow in both directions. Strong planning policies—especially land use regulations—assist easement programs by reducing acquisition costs, guiding easement location, controlling land uses on nearby parcels and adding to the stock of easements. Easement programs support planning policies by softening the landowner burden of regulation, giving continuity to regulations and helping to firm up growth borders.

Suggestions for improving planning policies include more advocacy by easement program leaders, expanding the regulatory toolbox beyond agricultural zoning, more attention to urban sources of development pressure on farmland, and increasing the sharing of information and technology between easement programs and local government planners.

1. INTRODUCTION

How does the work of agricultural easement programs relate to local planning policy? The considerable power of easements to protect farmland in the face of urban pressure makes this a compelling question. No other protection method produces the preservation certainty that comes from the removal in perpetuity of the development rights on select farms—a result achieved through landowner compensation. An easement program that takes away the development potential of thousands of acres of farmland in strategic locations can drive the course of urban growth in a community or region, easily overshadowing the relatively short-run processes of local government planning and land use regulation. Easement programs influence land markets, housing prices, the extension of public infrastructure, local government revenues and community quality of life.

Yet it is a mistake to promote easements as a solitary preservation technique, ignoring the more conventional methods of local government planning. For maximum effectiveness, agricultural easement programs deserve the support of complementary planning policies and regulatory practices. Because planning policies and practices are more comprehensive and cover larger landscapes, they have the potential to either enhance or undercut the accomplishments of easement programs. Protecting the public's investment in the millions of dollars spent on the purchase of development rights on farmland demands a supportive relationship. When easement programs and planning policies and regulations work with each other in a mutually-reinforcing fashion, they advance the multiple public policy goals of long-term farmland protection, efficient land use, wise application of public funds and political accountability.

The relationship of easements to local planning policy is the theme of this report. By “planning policy” we mean the formal efforts of local governments to manage land use changes resulting from urban pressures for the particular purpose of maintaining farmland in agricultural use. This includes both the broad goals and visions usually contained in comprehensive plan documents and the adoption and use of more specific regulatory controls on land use, especially agricultural zoning and urban growth boundaries.

We examine how such relationships affect the work of 46 agricultural easement programs, among them the most active in the nation. The 46 programs constitute the research sample of *The National Assessment of Agricultural Easement Programs*.

Natural Connections?

Mutually-reinforcing connections between easement programs and planning policies seem natural. At least in principle, agricultural easement programs and the local planning policies of local governments have similar objectives. They both purport to protect farmland from urban development, primarily by limiting the spread of residences and other non-farm uses in agricultural areas.

But some tension is introduced by the quite different methods used by easement programs and planning policies—one compensatory, the other regulatory. Easement programs purchase the development rights from willing landowners, paying substantial cash and/or offering significant tax advantages. Planning policies find less acceptance from landowners, because they are implemented by restricting what the landowners can do with their properties. There are also major differences in public visibility and control. Easement transactions are crafted in closed negotiations between landowners and the compensating

organizations, an inherently private activity even when conducted by a public agency. Planning policies and practices are the product of more open and democratic processes, the work of elected local governing boards, their appointed citizen commissions and at times entire electorates.

Adding to the potential for disconnection is the wide variation in the organization and governance of easement programs, as we see in this report. Some easement programs in our sample are operated by local governments that plan and regulate land use in their areas, although not always through a single department. Most often, however, the easement programs are organizationally separate from the public planning function—either because planning is a responsibility of more localized governments (municipalities in the case of many county- and state-level easement programs) or because easement activities are operated by non-profit land trusts.

On the other hand, these differences suggest certain opportunities for enhancing the relationship. The interplay of compensation and regulation can be a way of melding private landowners with broad public interests. For example, easement payments give participating landowners substantial economic benefits in the face of regulatory limitations. Strong land use controls, on the other side, when linked with easement programs provide a degree of public accountability and can reduce the costs of easement purchases.

The Scope and Organization of the Report

In examining the easement-planning connection, most of this report concentrates on the quality and effectiveness of the planning policy side of the equation, particularly the land use regulations that are intended to protect farmland from urbanization. Even where they partner with active easement programs, local government regulatory policies have independent effects on the retention or loss of farmland. They have had a longer history than the agricultural easement technique, which has been in widespread use only in the past quarter of a century. Because of their established presence, comprehensive character and basic role in controlling land use patterns, local government planning policies and practices are the most important ingredients in the easement-planning relationship. Strong regulations that restrict urban growth in agricultural areas enhance the relationship with easement programs; lenient regulations dilute it.

This report looks closely at agricultural zoning, the most common farmland protection technique used by local governments. But it also covers much more, including other land use techniques and the contributions of organizational arrangements and local politics.

The 11 chapters of the report follow this order:

- Four introductory and contextual chapters set the scene—summarizing how interviewees perceive easement-planning connections, describing organizational differences among programs, and examining the frameworks provided by state law and local general plans.
- Four middle chapters concentrate on agricultural zoning—describing the range of restrictive and permissive zoning policies, associated cluster arrangements, local political roots and a concluding critique.
- A chapter that examines other regulatory tools—primarily urban growth boundaries.

- Two concluding chapters—the first assessing the merits of the regulatory policies used to protect farmland, and the final chapter highlighting the benefits of complementary easement-planning relationships and suggesting policy improvements.

The National Assessment Project: Research Sample and Methods

This report is a product of *The National Assessment of Agricultural Easement Programs*, a broad review of the performance and effectiveness of such programs nationwide, jointly organized by American Farmland Trust and the Agricultural Issues Center of the University of California. It is the third in a series of four reports from the project—initiated in 2002—and is accompanied in release by the second in the series, *A National View of Agricultural Easement Programs: How Programs Select Farmland to Fund*. Our first report—issued late in 2003—profiled the progress and experiences of 46 leading easement programs in 15 states—the project’s research sample. The fourth and final report, scheduled for publication later this year, will assess overall the accomplishments of the sample program according to several measures of effectiveness, including land market impacts, enhancements to local agricultural economies and influences on urban growth.

The 46 agricultural easement programs in the research sample are located in 15 states (Table 1, Figure 1). They include the 20 or so top programs in the nation in easement acres acquired and funds spent, but also a number of smaller programs to give the project a wider representation of regions and types of communities and program arrangements. Most of the sample programs are concentrated in the Northeast where the easement technique has been most extensively used. In their governance and management, the sample programs vary in organizational types—county governments most commonly, but also state governments, municipalities and nonprofit land trusts.

At the base of our analysis is information from more than 270 open-ended phone interviews conducted with persons familiar with the individual programs. An initial 179 interviews, collected and transcribed in 2002 to 2004 and averaging more than 40 minutes each, dealt with respondents’ perceptions of a wide range of program features and impacts. In this initial round we were able to interview four persons apiece for most of the 46 programs—typically the program manager, a local planner, a local agricultural leader, and a rural lands appraiser or other local real estate expert. In 2005 we supplemented the first set with a series of shorter phone interviews on more focused topics—easement acquisition standards, land market effects and easement impacts on local agricultural economies. Also, from time-to-time we called program managers and others about specific inquiries.

Most of the data collected for this research thus are perceptual—the comments volunteered by interviewees about different types of easement impacts in response to open-ended questions. Most of the phone interviews were recorded and later transcribed for analysis. In addition, the analysis builds on objective and partly quantitative information. This includes information on program history, purposes, organization, easement activity, finances, acquisition criteria, etc., gathered from the interviews and from published sources and websites. We also tapped U.S. Census of Agriculture data, land market information and other sources.

TABLE 1
AGRICULTURAL EASEMENT PROGRAMS IN NATIONAL SAMPLE AND ACRES ACQUIRED, 2005

Program	Date of Origin	Easement Acres, 2005
CA – Marin Agricultural Land Trust	1980	38,000
CA – Monterey County Agricultural and Historical Land Conservancy	1985	13,481
CA – Napa County Land Trust	1976	6,648
CA – Sonoma County Agricultural & Open Space District	1980	31,082
CA – Tri Valley Conservancy	1994	3,731
CA – Yolo Land Trust	1988	5,400
CO – Boulder County	1975	22,567
CO – Gunnison Ranchland Conservation Legacy	1996	14,034
CO – Routt County/Yampa Valley Land Trust	1992/1996*	36,300
CT – State Program	1978	30,157
DE – State Program	1991	79,747
MD – Anne Arundel County	1978	11,475
MD – Baltimore County	1979	27,083
MD – Calvert County	1978	21,565
MD – Caroline County	1979	28,428
MD – Carroll County	1979	44,841
MD – Frederick County	1980	31,893
MD – Harford County	1989	38,665
MD – Howard County	1978	24,683
MD – Montgomery County	1979	64,998

Program	Date of Origin	Easement Acres, 2005
MD – Washington County	1978	18,500
MA – State Program	1977	55,516
MI – Peninsula Township	1994	2,265
NJ – Burlington County	1981	21,707
NJ – Cumberland County	1984	11,854
NJ – Hunterdon County	1980	18,093
NJ – Monmouth County	1981	9,350
NJ – Morris County	1983	5,334
NJ – Sussex County	1985	9,595
NY – Town of Southold	1984	1,684
NY – Suffolk County	1974	8,270
NC – Forsyth County	1984	1,255
PA – Adams County	1989	14,626
PA – Berks County	1989	42,597
PA – Buckingham Township	1995	2,758
PA – Bucks County	1989	8,402
PA – Chester County	1989	18,000
PA – Lancaster County	1980	48,558
PA – Lehigh County	1989	15,158
PA – York County	1989	27,974
VT – State Program	1987	110,000
VA – Virginia Beach City	1995	6,989
WA – King County	1979	13,000
WA – San Juan County	1990	1,117
WA – Skagit County	1997	4,236
WI – Town of Dunn	1996	2,131
TOTAL	--	1,053,747
AVERAGE	--	22,908

*Land Trust formed in 1992; County government program formed in 1996

FIGURE 1
RESEARCH SAMPLE
NATIONAL ASSESSMENT OF AGRICULTURAL EASEMENT PROGRAMS

CALIFORNIA

1. Marin Agricultural Land Trust
2. Monterey County Agricultural and Historical Land Conservancy
3. Napa County Land Trust
4. Sonoma County Agricultural Preservation and Open Space District
5. Tri-Valley Conservancy
6. Yolo Land Trust

COLORADO

7. Boulder County
8. Gunnison County
9. Routt County/Yampa Valley Land Trust

CONNECTICUT

10. State Program

DELAWARE

11. State Program

MARYLAND

12. Anne Arundel County
13. Baltimore County
14. Calvert County
15. Caroline County
16. Carroll County
17. Frederick County
18. Harford County
19. Howard County
20. Montgomery County
21. Washington County

MASSACHUSETTS

22. State Program

MICHIGAN

23. Peninsula Township

NEW JERSEY

24. Burlington County
25. Cumberland County
26. Hunterdon County
27. Monmouth County
28. Morris County
29. Sussex County

NEW YORK

30. Suffolk County
31. Town of Southold

NORTH CAROLINA

32. Forsyth County

PENNSYLVANIA

33. Adams County
34. Berks County
35. Buckingham Township
36. Bucks County
37. Chester County
38. Lancaster County
39. Lehigh County
40. York County

VERMONT

41. State Program

VIRGINIA

42. Virginia Beach City

WASHINGTON

43. King County
44. San Juan County
45. Skagit County

WISCONSIN

46. Dunn Township



National Assessment of Agricultural Easement Programs

Programs Studied in Project

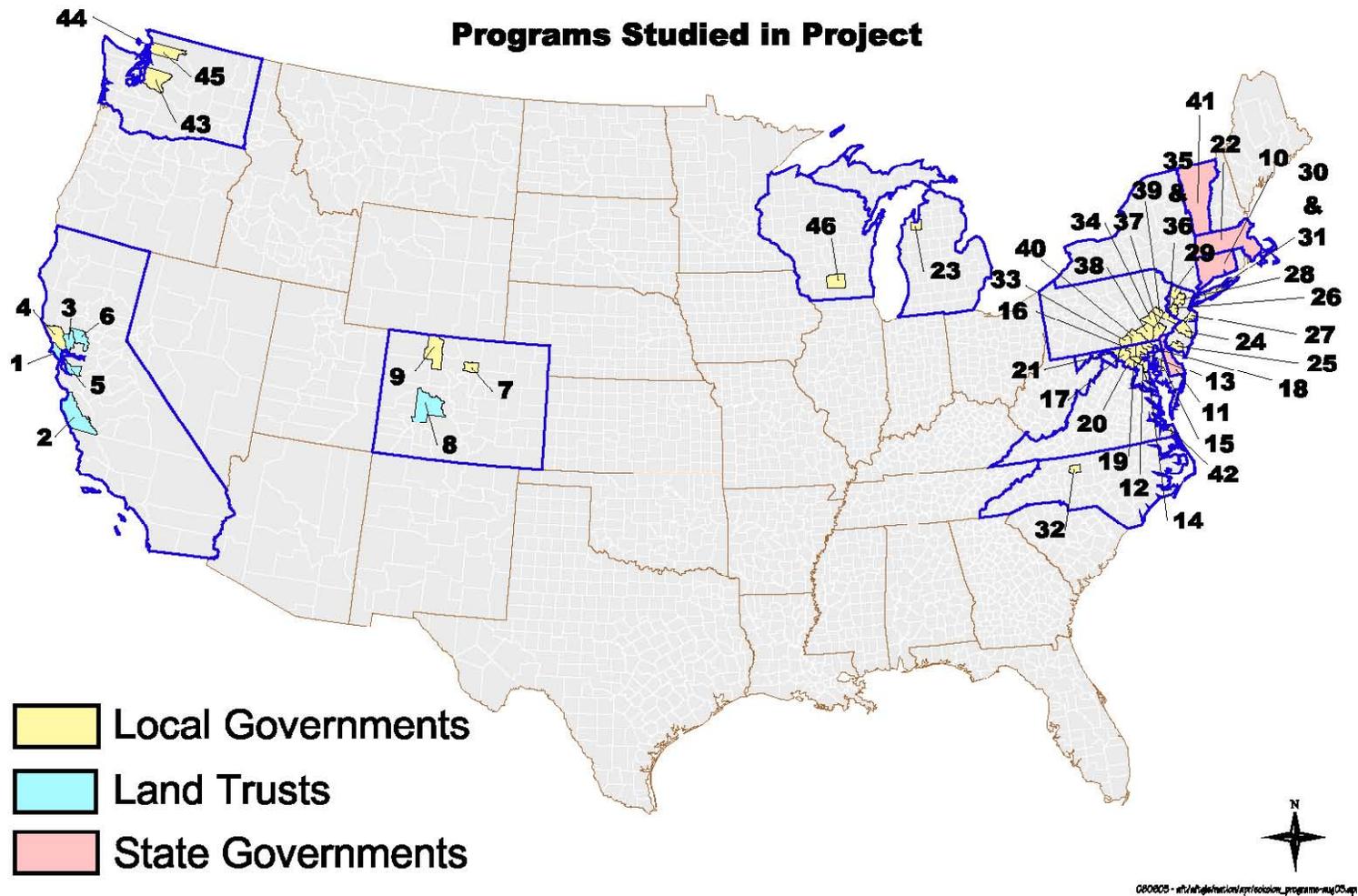


FIGURE 1 continued

2. PERCEPTIONS: CONNECTIONS AND DISCONNECTIONS

What interviewees said about the compatibilities and incompatibilities between easement programs and local planning policy gives an initial view of the diverse experiences of the 46 sample programs. In 2002 to 2004, program managers and others responded to two consecutive sets of open-ended questions:

1. “What are the connections, if any, between the (easement) program and the planning/land use policies of local governments in the area?” *Follow-up:* “Can you say that the easements have supported or been complementary to the planning policies or vice-versa? Or have they worked at cross-purposes?”
2. “What specific land use policies or techniques help the easement program? Which ones hurt or impede the program?”

A little more than half of the 179 persons covered in our initial round of interviews volunteered clear information about these relationships. (Other interviewees were not asked the pertinent questions or gave ambiguous or no answers.) Most usable responses described positive or mutually supportive connections. A smaller number pointed to incompatible connections or the absence of positive ones.

The perceived connections and disconnections mostly cite specific policies, techniques or processes. Listed in the order of frequency of mention, those items identified by at least 10 interviewees apiece are summarized below followed by illustrative extracts from the interview transcripts.

Perceived Connections

Agricultural Zoning — *cited by 40 respondents in 27 jurisdictions*

Interviewees who mentioned this most-cited form of connection emphasized its importance as the main local government tool for managing urban growth and protecting farmland. In its more restrictive versions—typified by limited residential density and narrow definitions of allowed uses—agricultural zoning protects easements by minimizing urban growth on their fringes. Likewise, a strong agricultural easement program, providing a compensatory option to landowners, complements the regulatory burden of restrictive zoning. About a quarter of the zoning-related responses cited cluster development as a useful tool for farmland preservation and easement acquisition. Comments were mixed on this point, since as well as observing the benefits of concentrating development and preserving open space remainders, some interviewees noted the limitations of the technique when preserved parcel portions are small or fragmented.

I think there's a definite connection there. They interact, reasonably well, in the sense that the planning and zoning policies of the county have looked at certain areas within the county, and targeted them as rural conservation areas and agricultural-type uses. It doesn't mean there's no development there, but certainly the zoning tries to minimize that development, and in turn, that helps to reduce the pressure on some of these properties, that would otherwise probably be sold and go into houses. There is less pressure there for that to happen, and this allows time and opportunity for these properties to be evaluated for easement purchases. — *agricultural leader, Maryland*

Comprehensive Plans – cited by 35 respondents in 29 jurisdictions

Most counties and many of the municipalities served by our 46 agricultural easement programs have general or comprehensive plans that sketch out desired land use and growth scenarios for their communities. While plan language is usually broad and general, many interviewees stressed the importance of these government-adopted policies as providing legitimacy and direction for farmland protection measures including easement programs.

...in the county's comprehensive plan there are very strong policy directives to protect and conserve farmland...that speak to the notion that a variety of programs should be utilized in achieving that goal, whether that be regulatory or financial. So not only do we purchase development rights, but we're also interested in exploring the possibility of doing TDRs here... – *planner, Washington*

Designated Growth Boundaries – cited by 27 respondents in 24 jurisdictions

Firm planning boundaries, which distinguish between areas where urban growth is preferred and areas where farmland or other open space is to be preserved, help define the appropriate areas for locating agricultural easements. Strict boundaries in effect send a message to landowners and others that certain areas are off limits in the long term to development, thus reducing farmland conversion expectations. They are most effective as growth boundaries around expanding cities or other population centers in regions where urbanization primarily occurs outward from such cores. Urban Growth Boundaries often encompass areas within which urban services are to be delivered, limiting the extension of public water supply, sewers and other services outside the boundaries. Several interviewees put agricultural districts into the boundary category, although strictly speaking they lack the growth limiting effects of strong urban growth boundaries. Widely used in several states and usually formed on a voluntary basis by landowners, the agricultural districts give farmland certain protections against urban impacts—such as right-to-farm standards, elimination of urban infrastructure fees and eligibility for easement programs.

I believe that the maintenance of that urban/rural demarcation line, which does send clear signals to landowners, is the underlying land use policy in _____ County, and indicates to them that any hope of changing zoning to realize more residential development is not likely to happen, so it probably encourages them to enter into the (easement) program, which is good for everybody. – *planner, Maryland*

Well, the regulations that have helped clearly are the ones that limit residential and other development, in agriculture production districts. I mean, you can't build a school, for example, and the residential density is very limited. I think that those are things that will really help the (easement) program continue. – *planner, Washington*

Intergovernmental Cooperation and Sharing – cited by 19 respondents in 14 jurisdictions

Especially in communities where easement programs and local planning responsibilities are in the hands of separate governments or other agencies, cooperation across governmental and agency lines is an asset for easement activities. Interviewees pointed to such forms of collaboration as joint funding of easement acquisitions, easement programs consulting planners on specific acquisitions, and the sharing of information and technology including Geographic Information Systems (GIS) mapping of resource areas.

Well, we have a pretty nice situation with the _____ County Planning Commission, because they reach out to all the municipalities, they reach out to the Builders' Association, the Real Estate Association, the Farmland Trust, the Agricultural

Preserve, to try to build by consensus to manage growth. And I think all parties realize that unmanaged growth won't help anyone, and it's in everyone's best interest to have managed growth. And they do a very, very good job with that. — *appraiser, Pennsylvania*

The other thing that the Planning Department does, that I just intensely appreciate, they have all of our easements in their mapping system. When someone comes in to the counter to inquire about any kind of building on an eased property that we hold, the planner, right there and then, picks up the phone and calls me. — *land trust director, California*

Locating Public Infrastructure — *cited by 15 respondents in 15 jurisdictions*

Decisions by local governments to limit the spread of urban services and infrastructure, whether because of cost or land preservation considerations, directly complement the work of easement programs. Like the urban growth boundaries described above, infrastructure limits can reduce the expectations of development in particular areas. On the other hand, local government policies that try to accommodate growth demands indiscriminately generate inefficient, leapfrog development and frustrate the goals of easement programs.

What's our policy about extending sewer? And...should we be building and widening other infrastructures, such as roads... It's a tool, one tool, that we have to help us preserve that rural area. — *planner, North Carolina*

Political Support — *cited by 15 respondents in 12 jurisdictions*

At the heart of successful easement programs, some respondents said, is strong community support for serious farmland protection policies and practices. Elected officials, planning commissions, professional planners and voters are all part of this constituency.

I really don't think that we (agricultural easement program) would have been able to get this far along if we hadn't been working together, and basically had the same goals as the county planning department. And, of course, that goes right on up to the commissioners... They set the agenda, and they tell the county planning people what they'd like to happen. The planning commission, of course, is appointed by the commissioners. So if they fill them up with developers, well, then you know what the planning commission's going to do. So it all starts with people who have been elected, and they have said, 'Well, we support the farmland preservation program, and we want to see it continue to grow.' ... And, of course, the flip side is that the citizens vote to elect certain people, and so if the citizens of the county had been pro-development, well then, we wouldn't have seen this kind of support of the planning policies that we've had. It goes right back to the voters, I guess you'd say.
— *agricultural leader, Maryland*

Other Connections. Accounting for less than 10 mentions apiece, a number of other forms of easement-planning connections were identified by interviewees. Those that received two or more mentions apiece, in order of frequency, were: (1) Transfer of Development Rights (TDRs) programs; (2) Right-to-Farm ordinances; (3) open space policies; and (4) criteria for acquiring easements.

No or Limited Connections Perceived

Ineffective or Absent Agricultural Zoning – *cited by 21 respondents in 17 jurisdictions*

While many interviewees identified strong agricultural zoning as a necessary complement to easement programs, others bemoaned the lack of restrictive zoning in their communities as a critical limitation in farmland protection efforts. Some specifically said that permissive zoning limited the effectiveness of their easement programs.

(Zoning and the agriculture preservation program) work at cross-purposes. The largest zoning classification we have is agricultural, and that is one unit per 10 acres. It can be clustered down to two acres to preserve farmland, but more often than not, when a farmer sells, he sells out, and it's a very large-lot subdivision, and in this economy, that 10 acres is not a deterrent for somebody to buy an oversized lawn. So I think that's been at odds with the program. – *planner, Maryland*

Easement-Planning Organizational Gaps – *cited by 10 respondents in 8 jurisdictions*

The fact that the easement programs and local government planning responsibilities in their communities are housed in different organizations was a source of concern for some interviewees. Thus, rather than complementing each other, easement acquisitions and local planning policy could be working at cross-purposes.

In Pennsylvania, we have township government as the ultimate source of responsibility. The county (responsible for the easement program) can make recommendations to the townships as to how to plan the use of their land. But the township supervisors have that ultimate decision, and sometimes they don't use it wisely. – *agricultural leader, Pennsylvania*

Other Disconnections. Fewer interviewees cited other incompatibilities between easement programs and local planning policies, in some cases providing negative mirror images of the positive connections described above. In order of frequency, disconnections receiving two or more mentions apiece were: (1) lack of planning; (2) political resistance to strong farmland protection policies; (3) weak or missing TDR programs; (4) lack of interagency cooperation; (5) ineffective clustering; and (6) industrial designations for farmland.

I think there are still some issues though, that are making it more difficult...to preserve farmland. And the biggest one is probably the resistance...to more cluster development, and that kind of thing, in terms of having a higher density in certain areas, to allow farmland to be preserved in other areas. I think that there is still a fairly difficult political sell, to allow those higher densities. – *agricultural leader, Maryland*

3. ORGANIZATIONAL LINKS AND GAPS

Organizational arrangements affect the relationship between easement programs and local planning policy. Whether they are housed in the same or different agencies obviously influences the degree of coordination between the two functions. One consequence of organizational separation, for example, is that decisions about where to acquire and locate new agricultural easements are less likely to be guided by, or coincide with, local planning policies.

Only 20 easement programs—less than half of our sample total of 46 programs—are located in the same governments that also operate the basic land use planning function in their respective communities (Appendix Table 1). In about half of these cases the easement program is directly operated by the planning department; the same staffs both manage easement tasks and work on more general planning responsibilities. Elsewhere, a degree of organizational distance is suggested by the management of the easement program by a different department in the same local government—either a park and recreation or an agricultural department, or an independent unit that reports directly to the governing board.

Among the other 26 cases where the responsibilities are formally separate, there are several distinct organizational patterns (Appendix Table 2). Easement programs are operated either by (1) nonprofit land trusts, (2) state governments, or (3) county governments. The planning function, on the other hand, is housed in either county or municipal (town or township) governments.

State laws determine where local planning authority resides, particularly land use regulatory powers. Half of the 26 separated arrangements are in New Jersey and Pennsylvania where zoning and other regulatory powers are in the hands of municipal governments while counties manage the principal easement programs. Likewise, in Connecticut, Massachusetts and Vermont, town governments have local land use authority while state governments directly manage the easement function (cooperately with land trusts in Vermont).

The organizational separation is the greatest in these states. Not only are the towns and townships much more localized and hence geographically different than the state or county governments that manage the easement programs, they are numerous in comparison to the associated easement programs. Using 2002 Census of Governments data, we count more than 1,053 separate town governments in the areas served by the pertinent county or state easement programs in our study sample. When just towns with agricultural easements are considered, the number of separate planning jurisdictions is fewer but still considerable. For example, 97 towns (of 237 total) in Vermont have easements within their boundaries, while there are between eight and 14 townships (out of totals of between 31-10) with easements for each of the six New Jersey county-level programs in our research sample. Multiple jurisdictions usually mean diverse zoning and other planning policies and practices, further complicating the efforts of easement programs to work with local planning regimes. Notes a Vermont official: “Some of our towns have no zoning at all, while others have quite sophisticated land use policies.”

By comparison, agricultural easement programs operated by nonprofit land trusts are less organizationally distant from local governments with planning responsibilities. All such land trusts in our sample are found in California and Colorado, where the nonprofits are

countywide in scope and hence share the same territory as the county governments that plan and regulate rural land uses.

Regional mechanisms in some states partially offset the local fragmentation of planning responsibilities. Counties in New Jersey and Pennsylvania prepare comprehensive plans that include farmland protection goals. To a limited extent, these plans help to guide the land use policies of municipalities that typically lack the planning expertise and information available to the larger county governments. County planning in these states also indirectly influences local farmland protection efforts through the control of water and transportation policies.

Similar planning opportunities are not available in Connecticut, Massachusetts and Vermont—New England states that essentially lack organized county government. However, Vermont since 1970 has had regional environmental review commissions that can turn down certain kinds of development projects approved at the municipal level that will have adverse effects on farmland or other local resources.

Working Relationships Across Organizational Boundaries

Even when organizationally separate, some easement programs manage to establish close working relationships with the local planning programs in their communities. Appendix Table 2 estimates the degree of connection (minimal, moderate, high) for the 26 easement programs that are isolated from the planning function. The estimates are based on interview comments made by program managers and planners. Four types of connections are identified:

1. Joint funding of easement acquisitions (most often where municipal governments contribute their own funds to county acquisitions).
2. Easement acquisition standards that give weight to local planning efforts.
3. Referral of proposed acquisitions to the planning program for review.
4. Other formal consultations between the two organizations including technical assistance and information sharing.

Several cases illustrate how close working relationships can transcend organizational separations. Two involve land trusts—ordinarily distant from local governments because of their nonprofit status, landowner orientation and efforts to stay clear of local policy controversy. Yet the Marin Agricultural Land Trust (MALT) (Marin County) and the Tri-Valley Land Trust (Alameda County), both in California, perform in part as agents of local government planning policy. MALT's board regularly includes a member of the elected county board of supervisors and two other members appointed by the supervisors. Furthermore, the land trust and county government share the same land use databases. The Tri-Valley Land Trust is actually a creature of county and city governments. It was organized in 1994 to carry out a preservation plan for an agricultural valley between two growing cities and its board includes representatives of the county and the two cities. By contrast, another California nonprofit, the Napa Land Trust, deliberately keeps a distance from local governments to show to landowners its neutrality on land use planning issues.

This separation extends to a policy of avoiding the use of public funds and thus acquiring easements only through landowner donations.

Among government-government connections, the county-run easement programs in Burlington County (New Jersey) and Lancaster County (Pennsylvania) have especially close relations with many municipal planning agencies in their areas. Both counties aggressively seek to influence local land use practices through technical assistance and informal contacts, with the goal of achieving greater compatibility between easement activities and zoning and other growth management regulations.

Representing Landowners, Not Planners

Organizational separation may have one advantage for the process of acquiring development rights—in providing for the independent representation of private landowner interests when dealing with public officials. One reason why land trusts in some regions of the nation are successful in acquiring easements is that, compared to governments, they are perceived by landowners as more approachable and sensitive to their agricultural and family concerns. Land trusts, as nonprofit organizations, also have the advantage to landowners of being located outside of the visibility of the public sector, seemingly providing a higher degree of privacy in the negotiations that accompany easement transactions.

The benefit of representing landowner rather than public planning interests was suggested by managers of several easement programs in our sample who are located in the same overall governments as the land use planners, but in separate departments. A program manager housed in a Maryland county's department of agricultural development, noted that an important part of his job was to "educate" the planners about the practicalities and nuances of local agriculture by serving as a spokesperson for farmers:

...we try to get those zoning restrictions (on farm practices) eased or permitted by right. Something as simple as putting up a deer fence to keep deer out of their crops requires special permitting. Because when you are less than 2 percent of the population, your voice at the table of government is very small. So we provide that niche to go and try bridge that gap between policymakers and decisions as to what actually gets implemented on the ground. — *program manager, Maryland*

4. POLICY FRAMEWORKS: STATE LAWS AND COMPREHENSIVE PLANS

Local governments develop their farmland protection practices within the frameworks of state laws and local comprehensive plans. The framework provides the legal and policy bases for the specific regulatory techniques discussed later in this report. State laws give local governments the legal authority to regulate land use and hence the ability to protect farmland in the face of urban growth. Comprehensive plans adopted at the local level provide another kind of framework, allowing communities to address future issues of resource protection and urbanization and creating the rationale for specific farmland protection measures.

State Laws: Mandates and Options

While the enactment and application of zoning ordinances and other regulations are community-level activities, they are made possible by the land use powers and limitations that state governments grant their local governments through constitutional and statutory language. A good part of the large variation from community to community in farmland protection efforts is due to differences in state rules, although there are also in-state variations because of local government discretion over specific techniques.

Although many states mandate the adoption of local comprehensive plans, their laws do not require the adoption of specific regulatory measures. Rather they empower local governments with the basic authority to plan and regulate land use, sometimes limiting these powers. State laws also provide the legal basis for agricultural easements—the removal in perpetuity of the development rights on conserved parcels through deed restrictions—and for organizing easement programs in local or state governments.

Appendix Table 3 summarizes the relevant rules of states representing most of the agricultural easement programs in our national sample. The summaries are based on the project's interviews, published sources (American Planning Association, 1996) and online versions of state codes. Included among these provisions are both expansions and limitations of local authority. For example, state-mandated local environmental review processes in California, Vermont and Washington allow communities to scrutinize development projects that will negatively impact farmland. On the other hand, state laws in Colorado, Delaware, New Jersey and North Carolina limit the application of agricultural zoning.

States also influence the finances of local agricultural easement programs, in both helping to fund local programs and establishing conditions on how the funds can be spent. At least five states provide much if not most of the money that funds easement acquisitions among the local programs in our sample. They are California, Colorado, Maryland, New Jersey and Pennsylvania.

Local programs compete for these funds according to the priorities and criteria imposed by the state agencies that distribute the grants. Our companion report, *A National View of Agricultural Easement Programs: How Programs Select Farmland to Fund*, describes these and other acquisition standards in detail.

Comprehensive Local Plans

Comprehensive plans that address community land use issues, including farmland protection, are common among county governments and, to a lesser extent, among

municipalities. Elected county and municipal governing boards adopt these plans, either voluntarily or as the result of state mandates. For the most part, plans cover broad themes and policies concerning resource protection and the future direction of urban development, supplemented with extensive maps and demographic, resource inventory and other details. Comprehensive plans provide both a vision of a desirable future and a policy basis and rationale for applying specific tools such as zoning, housing standards and transportation spending.

The documents adopted by local governments in agricultural areas almost always pay some attention to the merits of protecting farmland from urban intrusion. Many jurisdictions go further to cite specific protection techniques, including agricultural easements. Searching the websites of local governments in the research sample, we found 24 comprehensive or open space plans that contain explicit references to agricultural easements. We cannot say that this is a complete list, since some of the sample jurisdictions seem not to have online versions of their plans.

The identified plans represent 22 counties and two municipalities. We did not systematically search the web for municipal plans in states where municipalities exercise land use controls while easement programs (and some general planning responsibilities) are at the county or state level. In at least one of these states, Pennsylvania, there are a number of county plans with easement language.

What do the plans say about agricultural easements? Appendix Table 4 summarizes the pertinent language in the 24 selected plans. Usually the easement technique is given little more than credibility as an important tool for farmland protection—sometimes along with a list of other measures. In a few plans, however, it is singled out as the most effective tool for this purpose, considering its permanence and landowner compensation approach. The goals, achievements and other details of easement programs are presented in some plans. And a few even cite the specific organizations, including non-governmental land trusts, which operate agricultural easement programs.

It is instructive to look at the origins of such language. Most notable are easement provisions put into plans before agricultural easement programs were organized—in effect playing a role in the formation of the programs. At least three programs (Sonoma and Tri-Valley in California, Routt in Colorado) emerged out of community processes that resulted in the adoption of new or updated comprehensive plans. As far as we can tell, the pertinent language in most of the other plans was added only after the local agricultural easement programs were organized—not as powerful a connection, but still an important recognition of their value in the farmland protection arena.

Comprehensive plans give direction and help set policy. But they are not self-executing mechanisms; to have an actual impact on land use patterns, specific regulatory and other techniques are needed. The analysis of their scope and uses takes up most of the rest of this report.

5. AGRICULTURAL ZONING: THE BASIC TOOL

Zoning—particularly agricultural zoning—is the most common and basic planning-related tool for protecting farmland from urbanization. Agricultural zoning is the “foundation” for most farmland preservation efforts by local governments (Cordes, 2001). As explained by a Maryland interviewee:

...if you're going to do agricultural preservation in the absence of restrictive agricultural zoning, you're really not going to end up protecting anything. ...if you can build at a high density adjacent to farmland, you haven't really protected anything, because that farm is now at threat. Residential land use adjacent to farmland is not co-habitable; it creates its own unique set of problems. So, I think that any farmland preservation program has to be coupled with restrictive agricultural zoning, in order to be able to make it truly successful. — *program manager, Maryland*

However, zoning is often a fragile and ineffectual device for managing land use changes. The restrictions it applies to individual parcels are subject to the political whims of the urban development arena, changes in the composition of governing boards and planning bodies, and landowner resistance to limits on their economic options. Zoning restrictions are easily changed by local government boards through variances, other exceptions and outright reclassification (rezoning) in the process of facilitating the conversion of agricultural land to urban uses. Furthermore, much zoning that is labeled “agricultural” or “rural residential” throughout the nation is only minimally protective of farmland because of weak standards, as we see below in the analysis of zoning arrangements in the communities served by our sample easement programs.

There are exceptions, of course, in particular localities where zoning regulations help to control the conversion of agricultural land because of restrictive standards for parcel size and allowable uses. Behind the creation and application of these standards usually are favorable conditions in the local political process—strong support from local elected legislatures and their communities. But even in such places, zoning by itself is not a “magic bullet” for solving the farmland conversion problem. It works best when it is based on clear and consistent general plan policies and is part of a larger package of preservation strategies and tools (American Farmland Trust, 1997; Coughlin, 1991; Daniels, 1993).

Agricultural Zoning Patterns

Agricultural zoning protects agricultural operations by restricting the interference of more intensive land uses, especially non-farm residences (Daniels, 1993). Local government zoning ordinances address this objective in two major ways: (1) by requiring large parcel sizes for farmland; and (2) by limiting the uses allowed on such designated parcels.

In the case of parcel size, larger is better. To be economically viable, most agricultural operations require large plant and animal growing areas. And to avoid the negative impacts of adjacent residential and other non-farm uses, they should be located among similarly sized parcels also devoted to farming. Also the larger an agriculturally-zoned parcel, the more expensive it becomes for prospective homebuyers to purchase, thus limiting the potential for conversion to non-farm use.

Similarly, use restrictions seek to keep out activities that are not directly related to agriculture and may, in fact, interfere with commercial farming. For some local ordinances that define agriculturally appropriate uses very narrowly, this means keeping out such activities as landfills, parks, golf courses, farm machinery repair shops, food and animal processing facilities, schools, churches, and day care centers—uses that are often proposed for rural locations because of cheaper land prices. The label “exclusive agriculture” is sometimes applied to such strict zoning limitations (American Farmland Trust, 1997, 52, 58; Bowers, 2001; California Farm Bureau, 1997; Daniels and Bowers, 1997, 115-117).

Local zoning arrangements vary greatly among the 46 sample easement programs, as Tables 2 and 3 indicate. Most evident is the large disparity in parcel size standards, as indicated by the minimum acres required for an agricultural parcel; zoning prohibits the division of such a parcel into smaller lots. The tables express minimum size according to the acres required for one or more residences in an agricultural or rural residential zone. Parcel sizes in these zones range from more than 100 acres in several California counties to one acre in some eastern counties and municipalities.

Tables 2 and 3 divide the programs into two general categories that characterize the strength of local agricultural zoning efforts—“relatively restrictive” and “relatively permissive” zoning arrangements. Only 13 programs, less than a third of the total sample, fit into the first category, while 33 programs serve communities that have relatively weak zoning for farmland protection.

**TABLE 2
PROGRAMS WITH RELATIVELY RESTRICTIVE AGRICULTURAL ZONING**

Program	Zoning Agency	Zone Classification(s)—Minimal Residential Density (Residence per Acres)
CA – Marin Agricultural Land Trust.	Marin County	Agricultural District –1:60. Agricultural Production Zone – 1:60 (coastal areas).
CA – Napa County Land Trust	Napa County	Agricultural Reserve (Valley floor) – 1:40. Agric. Watershed and Open Space (hillsides) – 1:40 to 1:160.
CA – Sonoma County Agricultural. & Open Space District	Sonoma County	Land Intensive Agriculture– 1:20 to 1:100.
CA –Tri Valley Conservancy	Alameda County	Vineyard Agriculture – 1:100.
CA – Yolo Land Trust	Yolo County	Agricultural Preserve – 1:80 for irrigated cropland; 1:160 other cropland; 1:320 grazing land.
CO – Boulder County	Boulder County	Agricultural District – 1:35.
MD – Baltimore County	Baltimore County	Agricultural Protection Zone – 1:50.
MD – Montgomery County	Montgomery County	Rural Density Transfer Zone – 1:25.
PA – Lancaster County	townships	Varies by township, with 1:25 typical, up to 1:50.

Program	Zoning Agency	Zone Classification(s)–Minimal Residential Density (Residence per Acres)
VA – Virginia Beach City	Virginia Beach City	Agricultural Reserve Area – 1:15, based on soil type.
WA – King County	King County	Agricultural Districts – 1:35 in most cases, 1:10 for lots under 35 acres.
WA – Skagit County	Skagit County	Agricultural/Natural Resource Zoning – 1:40.
WI – Dunn Township	Dunn Township	Agricultural Preservation Area – 1:35.

Sources: Interviews, language of zoning ordinances.

**TABLE 3
PROGRAMS WITH RELATIVELY PERMISSIVE OR NO AGRICULTURAL ZONING**

Program	Zoning Agency	Zone Classification(s)–Minimal Residential Density (Residences per Acres)
CA – Monterey County Agr & Historical Land Conservancy	Monterey County	Agricultural Industrial – 1:40 in crop production areas; 1:150 in grazing areas.
CO – Gunnison County	Gunnison County	No formal zoning. Version of “performance zoning” with compatibility review.
CO – Yampa Valley Land Trust	Routt County	No agricultural zoning. Rural Residential zoning – 1:35.
Connecticut – State Program	Towns	Varies. Agricultural-Residential zoning of 1:2 is typical for towns without public water and sewer.
Delaware – State Program	Counties	Varies. No agricultural zoning. Typical Rural Residential – 1:1.
MD – Anne Arundel County	Anne Arundel County	Residential Agricultural District – 1:20 (88,000 acres). Rural Low Density – 1:5 (10,000 acres).
MD – Calvert County	Calvert County	Agricultural Preservation District – 1:25. Farm Community District – 1:20, may be increased to 1:10 with TDR.
MD – Caroline County	Caroline County	No formal agricultural zoning. Rural Zone – 1:20.
MD – Carroll County	Carroll County	Agricultural Zone – 1:20 (160,00 acres).
MD – Frederick County	Frederick County	Agricultural Zone standards vary by parcel size, clustering, and date. 3:25 is typical.
MD – Harford County	Harford County	No agricultural zoning. Rural Residential Zone – 1:10.
MD – Howard County	Howard County	No agricultural zoning. Rural Residential and Rural Conservation zones – 1:4.25.
MD – Washington County	Washington County	Agricultural zoning in Rural Legacy Area – 1:30. Other rural areas – 1:5 and 1:20.
Massachusetts – State Program	Towns	Varies. Agricultural-Residential zoning of 1:1 to 1:2 is common.

Program	Zoning Agency	Zone Classification(s)—Minimal Residential Density (Residences per Acres)
MI – Peninsula Township	Peninsula Township	Agricultural zone – 1:5.
NJ – Burlington County	Townships	Varies. No agricultural zoning. Rural Residential zones average 1:6.
NJ – Cumberland County	Townships	Varies. No agricultural zoning. Rural Residential zones range from 1:2 to 1:6.
NJ – Hunterdon County	Townships	Varies. No agricultural zoning. Rural Residential zones range from 1:3 to 1:10, with 1:5 and 1:6 most common.
NJ – Monmouth County	Townships	Varies. No agricultural zoning. Rural Residential zones range from 1:2 to 1:10.
NJ – Morris County	Townships	Varies. No agricultural zoning. Rural Residential zones range from 1:1 to 1:10.
NJ – Sussex County	Townships	Varies. No agricultural zoning. Most Rural Residential zones are from 1:1 to 1:7.
NY – Southold Township	Southold Township	Agricultural-Conservation Zone—1:2.
NY – Suffolk County	Towns	Varies. Towns with significant agriculture generally have 1:2, with low of 1:5.
NC – Forsyth County	Forsyth County	No agricultural zoning. Rural Residential is 1:1 with roadway access.
PA – Adams County	Townships	Varies. About half of townships have agricultural zoning. Low of 1:25.
PA – Berks County	Townships	Varies. About half of townships have agricultural zoning, with 1:10 to 1:40.
PA – Bucks County	Townships	Few townships have agricultural zoning. Typical Rural Residential is 1:2.
PA – Buckingham Township	Buckingham Township	Agricultural Zone – 1:1.8
PA – Chester County	Townships	Varies. 14 of 73 townships have agricultural zoning with range from 1:10 to 1:25.
PA – Lehigh County	Townships	Varies. 4 of 13 townships have agricultural zoning through percent allocation. Elsewhere 1:2 is common.
PA – York County	Townships	Varies. About 20 townships have agricultural zoning with 1:10 common.
Vermont – State Program	Towns	Varies. Many towns lack zoning. Common Rural Residential is 1:2.
WA – San Juan County	San Juan County	Agricultural Resource Districts – range from 1:5 to 1:40.

Sources: Interviews, language of zoning ordinances.

Parcel Size Variations

Relative parcel size forms the major basis for this classification. All but one of the programs in the restrictive category (Table 2) serve communities where agricultural zoning calls for parcels with 25-acre or greater minimums. This approximates the size threshold for effective protection of agricultural properties identified in several reports (American Farmland Trust, 1997; Maryland Center for Agro-Ecology, 2004). By contrast, virtually all the zoning arrangements listed in Table 3 have smaller parcel size requirements.

I don't know what would have happened if we didn't have this 25-acre zoning. I'm certainly thinking that more of the county would be developed, there would probably be more traffic, more pressure on our infrastructure. — *planner, Maryland*

Among the more restrictive arrangements, zoning in several California counties (Table 2) features multiple classifications for different types of commodities or practices. This recognizes the agricultural diversity of these areas and the varying land requirements for different forms of farming. In Yolo County, for example, minimum parcel sizes progressively increase from irrigated cropland, to non-irrigated cropland, to grazing land.

On the other hand, zoning arrangements in the more permissive category tend to be simpler and less refined. Indeed, many counties and municipalities (including all New Jersey jurisdictions) lack formally-designated agricultural zones, but include farming as an allowed but not primary use in rural residential zones. And a few jurisdictions in the sample even lack zoning of any kind.

A further indication of the permissive nature of zoning in many places is that ordinance-defined housing/acre ratios are not necessarily an accurate indication of actual residential densities. Instead, additional houses are often located on individual farms because of exceptions for family units and other purposes. For example, in Carroll County, Maryland, while zoning calls for one residence per 20 acres, the “effective” density is only one per 15 acres, according to interviewees.

Use Variations

The restrictive-permissive dichotomy also takes account of variations in allowable uses in agricultural zones—although to a lesser extent than parcel size requirements. The more restrictive local ordinances usually define allowed uses more narrowly than the permissive laws, reflecting differences in the scope of activities regarded as compatible with commercial agriculture. This is a general observation that is based on use information for just a few of the programs in the sample. Determining the exact use requirements for most of the pertinent local ordinances was not possible, because of the sheer number of planning jurisdictions in the sample and the often ambiguous or excessively detailed language of the ordinances readily available.

As an illustration of how allowable uses can vary in agricultural zones, Table 4 compares the language of four ordinances—two each from the restrictive and permissive categories. The restrictive programs list fewer uses, both those automatically allowed (by right) and those requiring review and permitting. Typically, the permissive zoning arrangements are more lenient in allowing such activities as food processing, schools and other public facilities, golf courses, recreational facilities, day care and aircraft landing strips.

TABLE 4
ILLUSTRATIVE ALLOWABLE USE PROVISIONS IN AGRICULTURAL OR RURAL ZONES

Program	Zone	Uses Allowed by Right (in addition to agriculture and one residence)	Conditional Uses Requiring Review and Permit
<i>Jurisdictions with Relatively Restrictive Agricultural Zoning</i>			
CA – Yolo County (Yolo Land Trust)	Agricultural Preserve	2 – public parks, rural recreation.	23 – including agric labor camps, animal feed yards, electrical substations, communications buildings, wastewater treatment ponds, commercial stables, oil- and gas-drilling, surface mining, lodges, landing strips, bed-and-breakfasts.
WA – Skagit County	Agricultural-Natural Resources	6 – co-housing, family day care, historic sites, home based business, water impoundments and diversion, wholesale nurseries.	15 – including bed-and-breakfasts, utility expansion, emergency services, salmon recovery projects, wireless service towers, temporary outdoor events, trailheads, natural resource research, outdoor outfitters, private marinas, shooting club, temporary asphalt/concrete batching.
<i>Jurisdictions with Relatively Permissive Agricultural Zoning</i>			
MD –Howard County	Rural Conservation	11 – including conservation areas, feed mills and grain processing, convents and monasteries, schools and other government structures, private recreational facilities, nonprofit carnivals and fairs, volunteer fire departments, bed-and-breakfasts.	39 – including adult housing, aircraft landing areas, animal hospitals, antique shops, athletic facilities, beauty/barber shops, bed-and-breakfasts, cemeteries and mausoleums, country clubs and golf courses, day care centers, kennels and pet grooming, landscape contractors, libraries and museums, nonprofit clubs, stables, school bus parking, shooting ranges.
MI – Peninsula Township	Agricultural	11 – including two-family dwellings, mobile homes, small animal raising, home occupations, cemeteries, tenant house, parks, mining of topsoil, day care.	20 – including planned unit developments, food processing plants, institutional structures, greenhouses, stables, game preserves, veterinary hospitals, sawmills, gold courses and country clubs, public buildings, airports, warehousing.

Sources: Zoning ordinances.

6. CLUSTER DEVELOPMENT: A COMPROMISE

Cluster development is a compromise between development and preservation, one that gives landowners some return on their equity by allowing limited residential subdivision while also partly protecting open space. It is a technique closely associated with zoning and subdivision control; “cluster zoning” is the label sometimes used. Instead of the parcel size and use standards of conventional zoning, clustering focuses on the location of residences to be created. They are concentrated on a limited portion of a parcel undergoing development, while the remainder is retained in agriculture or other open space. Thus clustering is intended to make more efficient use of land in residential development and preserve more open space than would occur with the scattered distribution of large lots normally allowed by rural zoning densities. To encourage clustering, landowner incentives are sometimes offered, primarily a density “bonus” or additional residential units beyond the basic zoning allotment.

Planning jurisdictions associated with about half of the 46 agricultural easement programs in our sample provide for clustering, as a requirement for certain kinds of residential development on agricultural land. Clustering is most common among counties in Colorado and Maryland and town governments in New Jersey, Pennsylvania and Suffolk County, New York.

Illustrating commonalities and variations in cluster systems, Table 5 details the major features and experiences of nine of these arrangements in the national sample. Some form of clustering is usually required as a condition for following a land division process that, as an alternative to the normal subdivision route for rural residential development, is attractive for some landowners. Among the variations from community to community are specific siting and other design guidelines for residences.

Several other jurisdictions served by easement programs have similar arrangements for minimizing the residential portions of agricultural properties, although they are not examples of “clustering”, strictly speaking. For example, county zoning in the South Livermore Valley of California served by the Tri-Valley Conservancy allows up to five residences on a 100-acre agricultural parcel, providing that individual homesites are confined to two-acre portions of 20-acre farms and the preserved remainder is devoted to crop production.

**TABLE 5
EXAMPLES OF CLUSTER ARRANGEMENTS**

Program	Percent of Parcel Preserved	Basic Zoning Density	Incentives and Requirements	How Preserved	Acres/Parcels Preserved
CO – Boulder County	75%	1:35	Required for Non-Urban Planned Unit Developments, in exchange for bonus density, doubling of residential units. Residences clustered on 25% of parcels.	Dedicated easement	10,000 + acres in 200+ parcels. Aver-50 acres
CO – Routt County	At least 60%	1:35	Required for the Land Protection Subdivision option. Incentives are expedited review and bonus of one additional residence per 100 acres preserved. Residences clustered in 5 to 7 acres sites, with design guidelines to protect irrigated rangeland and water resources.	Dedicated easement or restricted use for 40 years	
CT – Woodstock Town	40%	1:2	Optional as alternative to conventional subdivision. Incentive is increase in allowable housing units, clustered on ¾ acre lots. Reduced subdivision standards for road frontage, lot setback, etc. for clustered lots.	Parcel deeded to conservation organization or municipality	Approximately 80 acres in 5 parcels. Aver-6 acres
MD – Calvert County	80% in Farm-Community District; lower targets in other zones.	1:10 in F-C Districts	Required for subdivision in Farm-Community Districts. No change in density.	Dedicated easement	
MD – Carroll County	No specific target. Average 80-85%	1:20	Required for rural subdivision approval. Residences clustered on approximately one-acre lots, subject to health department approval, and located away from tillable portions of parcel.	Note on subdivision plat	14,307 acres in 709 parcels. Aver-20 acres
MD – Howard County	No specific target. Average 70%	1:4.25	Required as Cluster Subdivision for parcels over 20 acres in Rural-Conservation zone. Clustered parcels are 1 to 1 1/2 acre (40,000-60,000 square feet) in size. Required buffers between residences and farmland.	Dedicated easement	750 acres in 24 parcels. Aver-31 acres

Program	Percent of Parcel Preserved	Basic Zoning Density	Incentives and Requirements	How Preserved	Acres/Parcels Preserved
NJ – Monmouth County, Upper Freehold Town	75%	1:3	Optional as a Farmland Preservation Subdivision. Clustered on one-quarter of the parcel, with half of the allowed residences. At least 75% of the preserve remainder must be upland agriculture.	Dedicated easement	1 parcel
NY – Southold Township	80% or 75%	1:2	Required for development as a Conservation Subdivision, providing reduced fees and simpler review. Applicable to parcels of seven acres or more. Under the 80% preservation option, clustered development is reduced by 60% of regular density; the 75% option reduces clustered development by 75%.	Dedicated easement	New program adopted in 2005
VA – Virginia Beach City	No specific target. 75% average.	1:15 for prime soils	One of several conditions for an alternative rural residential subdivision, in place of a standard subdivision, allowing higher density depending on soil conditions. The closer development guidelines are followed, the higher the residential density – 1:5 or 1:10.	Note on legal instrument	600 acres in three farms. Aver-200 acres.

Sources: interviews, program descriptions.

Questioning the Technique

Considering the details of Table 5 and what interviewees told us, clustering has a mixed record as a land use technique for protecting agricultural land. There are questions about its contributions to retaining agricultural operations and its durability over time.

How Much Preservation? In all but one of the nine examples, the preserved area (termed ‘remainders’ in some jurisdictions) subject to clustering exceeds half of the total size of the original parcel. In fact, preservation remainders in most cases are 70 percent or more of total acres, meaning that residences are concentrated on 30 percent or less of the land—seemingly an impressive outcome.

However, this tells us little about how useful the remainders are to commercial agriculture, particularly the size and shape of land available for farming. Obviously, the larger the parcel on which clustering occurs, the more agricultural operations are enhanced; 70 percent of a 200 acre parcel retains 140 acres of farmland while 70 percent of a 20 acre parcel leaves only 14 agricultural acres. Smaller or irregularly shaped remainders are less efficient to farm and are more vulnerable to interference from urban neighbors.

We have information on average remainder parcel sizes for five of the cluster arrangements described in Table 5. Averages range between 16 acres for the Town of Woodstock (Connecticut) to 200 for Virginia Beach City (Virginia). Certainly this conceals a great deal of variation within jurisdictions. Carroll County, Maryland, is one of the most active users of clustering. It has 488 remainder parcels less than 20 acres apiece, averaging seven acres, as well as 21 parcels of more than 100 acres apiece, averaging 137 acres.

Some local governments attempt to overcome the limitations of small acreage and irregular shape through the careful location and design of the residential clusters. This includes placing them as much as possible in the least agriculturally productive parts of parcels, such as woodland, minimizing the sizes of individual homesites, and providing agricultural-residential buffers. Then too, small remainders in adjacent locations can be combined for farming operations. For certain intensively-cropped, high-value commodities, small size is not necessarily a critical barrier to productive farming. One example is seen in Suffolk County, New York, where a number of remainders less than 10 acres apiece are profitably used to grow wine grapes.

Still, the overall impression provided by interviewees is that preserved remainders are not easily maintained in commercial farming.

...we generally try to get relatively small residential lots clustered, so that there is a remainder that is large enough to stay in agricultural use. That doesn't always happen; some pieces aren't really large enough. Also they may have environmental constraints like flood plains, or wetlands, or whatever, that is not viable for agriculture, although it's still open space. — *planner, Maryland*

... most of the farms here are, let's say 20 acres, not that big. We call them the french fries, really long and narrow...they either go from road to road, or they go back to the water. So, if you look at it in a practical sense, and you say, "OK, you have to cluster," well, are you going to...sell me five ugly houses right on the road, this long, narrow strip of property that's protected for agriculture, but there's nobody

who's going to farm that there. They have poor access, and, of course, those landowners have lost their view. — *agricultural leader, New York*

How Preserved? The optimal method for ensuring the preservation of open space remainders is to put easements on them, thus eliminating their development rights. Landowners or developers donate the value of the preserved remainders to the easement holder in return for the benefits of clustering. A few agricultural easement programs have acquired a substantial share of their total holdings in this way. Boulder County (Colorado) appears to be the nation's leader in this form of acquisition, with the 10,000 preserved acres created through its Non-Urban Planned Unit Development program representing about half of the program's total agricultural easement activity.

Six of the 10 arrangements described in Table 5 require remainders to be dedicated as easements, with one (Routt County, Colorado) offering this as a preservation option along with a 40-year restriction. The town of Woodstock has a unique approach that transfers full ownership of remainder parcels to non-profit conservation organizations or the municipalities (town governments)—producing a level of restricted use similar to easements.

For the other cases identified in Table 5, the preservation methods used do not require easements and hence are less restrictive. Usually they take the form of a note filed with the approved subdivision plat. While having the imprint of a legal requirement, this obviously lacks the permanence of an easement recorded with the property deed. The superiority of the easement route to preservation was suggested by this interviewee:

... right now, all we require is a note on the plat that says, "This remainder cannot be further subdivided unless it's rezoned." We have had property owners request rezonings on those ag remainders. I can only think of one or two of them that have actually been rezoned, but the potential is there, and if that was changed so that those ag remainders were put into some form of perpetual easement, that would alleviate even that one or two instances that may be out there. And I think it would also alleviate the landowner thinking, "Well, I may at some point in the future, be able to go through a rezoning." — *planner, Maryland County*

It is not clear how durable most of these arrangements are, considering the short history of the open space-related clustering technique. In one community, however, plat notes have been an effective preservation method since 1978. This is Carroll County, where the restrictions have yet to be challenged by parties seeking development on remainders.

How Widely Used? Included in the nine programs described in Table 5 are two county governments that have used clustering extensively in their farmland protection programs. Boulder County (Colorado) and Carroll County (Maryland) are exceptional in that each has accumulated more than 10,000 remainder acres. Others have more modest records, accumulating not more than a few hundred acres apiece in this fashion. They are representative of the many local governments—especially towns and other municipalities—served by easement programs in our sample which have cluster arrangements on their policy books but which make little use of them.

A major reason for this limited use, as explained by a number of interviewees, is the reluctance of landowners and developers to take part in cluster arrangements. Participation

in most cases is voluntary; only if landowners opt for a specific conservation-oriented alternative for residential development (variously labeled “Non-Urban Planned Unit Development”, “Land Protection Subdivision”, “Farmland Preservation Subdivision”, etc.) that allows a density bonus is clustering required. Carroll County is an exception, as indicated in Table 5, in requiring clustering for all types of rural residential subdivision.

Density bonuses actually are a disincentive for many landowners and developers. Rather than accepting the cost advantages of creating small lots in concentrated areas, they prefer to cater to the market for large residential homesites in rural areas. According to one Maryland county interviewee:

What makes it more difficult in this county to preserve farmland...is the political resistance to more cluster development... It is still a difficult political sell to allow those higher densities...even though that makes sense from the standpoint of the overall land use situation... People still want to be able to buy their five or three acres. —*agricultural leader, Maryland*

The Critique of Cluster Development

Our findings generally coincide with the skepticism expressed by land use planners and farmland protection advocates of the merits of cluster development as a technique for maintaining productive farmland. Clustering, they conclude, is more likely to conserve open space amenities for large lot residential neighborhoods. According to Tom Daniels:

The ultimate result may be clusters of suburban communities with a modicum of open space between them, rather than a working rural landscape with active commercial farm operations. And sprawl is still sprawl, whether it comes in a wave of development or in a proliferation of clusters. (Daniels, 1997, p. 132)

Daniels and other critics (American Farmland Trust, 1997, 33; Arendt, 1997; Daniels and Bowers, 1997, 122-23; Maryland Center, 2004, 20-21; Smith and Spadoni. 2004.) single out these limitations of the technique:

- Clustering frequently produces remainder parcels that are too small, irregularly shaped or fragmented to be effectively used in commercial agriculture.
- The best agricultural soils on divided parcels are not necessarily located on preserved remainders, because of greater priority given to resource protection objectives other than farmland—wetlands, habitat, woodlands, etc.
- In fact, the best agricultural soils on parcels with mixed characteristics are often also the best sites for building homes because of level ground and excellent absorption for septic systems.
- Efforts to reduce the overall size and impact of residential clusters are limited by local health department requirements for lots large enough to support septic systems and water wells, usually one acre or more depending on local conditions.
- Placing even small residential clusters on an agricultural landscape interferes with serious farming, despite design guidelines and efforts to separate the two activities.

Certain agricultural practices, such as the spraying of fruit trees, are difficult if not impossible to carryout in areas where farming is interspersed with non-farm residences.

- Finally, cluster requirements in many communities are a concession to landowners and a technique more politically palatable than more restrictive farmland protection measures, such as a substantial increase in the minimum residential lot sizes under basic zoning.

Clustering is pictured in these critiques as a useful farmland protection method only in rapidly urbanizing areas where most agricultural parcels already are slated for residential development. As characterized by Bob Wagner of American Farmland Trust, it is a “last ditch effort” to minimize the impact of scattered, large lot residents allowed under permissive zoning (cited in Daniels and Bowers, 1997, 122).

7. AGRICULTURAL ZONING AS A LOCAL ACTIVITY

Why do agricultural zoning standards and other regulatory tools vary so widely from community to community? Differences in state laws that establish the legal frameworks for planning policies and practices are one reason. But more important are strictly local factors—the political conditions, landowner influence and official leadership that support restrictive or lenient farmland protection measures.

We see this in how local agricultural zoning arrangements vary within single states, sometimes more dramatically than from one state to another. Nowhere in our sample of jurisdictions is this more evident than in Maryland and Pennsylvania, where certain counties and municipalities maintain substantially more restrictive agricultural zoning than nearby localities.

In Maryland, Baltimore (1:50 zoning) and Montgomery (1:25) are considered exemplary among large metropolitan counties in the relative effectiveness of their agricultural zoning policies, according to a recent statewide study of county planning (Maryland Center for Agro-Ecology, 2004, 46). This distinction was also applied to Carroll (1:20) and Frederick (3:25) among smaller counties. By comparison, other Maryland counties either lack agricultural zoning or have ineffectual zoning with smaller parcel size requirements.

In Pennsylvania, officials in other counties look enviously at Lancaster County's record as the state's leader in farmland protection efforts, a record based as much on agricultural zoning and other regulations as the accumulation of agricultural easements. With leadership from county government, township governments in Lancaster since the mid 1970s have adopted the most restrictive agricultural zoning ordinances in the state. As of 1998, 39 of the county's 41 townships had agricultural zoning, most with 1:25 densities and three with 1:50 (Daniels, 1998). Elsewhere in the state, 1:10 and smaller parcel size minimums are typical in agricultural zones. Interviewees in other Pennsylvania areas offered these observations about the Lancaster record:

Our county has a weak kind of ag zoning, and Lancaster County's is much stronger. I like theirs a lot better. — *agricultural leader, Pennsylvania*

...if you look at all the zoning within the townships of (our county), it provides for heavy residential development in every township. On the other hand, Lancaster County has a lot of agricultural zoning, which is very prohibitive on their development, although it varies among the townships. We don't have that. We can have a bunch of preserved farms, but then the farm right next to it, which you would like to think shouldn't be developed, will still allow 100 houses, or 50 houses, whatever it would be suitable for. And so we're still getting those scattered communities all over the county, and not really doing a good job... — *realtor, Pennsylvania*

Downzoning and other Regulatory Changes

Changes in zoning standards for farmland are another indication of the influence of local conditions. Many of the local governments covering the 46 sample easement programs over the years have gradually adopted stronger farmland protection measures. The most common change is downzoning to achieve lower residential densities in agricultural areas.

Revisions in some cases are minimal; for example, from 1:1 to 1:2 or just 1:1/2 to 1:1 densities by a number of eastern town governments. In a few cases they are quite dramatic; as the decrease from 1:1 to 1:30 by Washington County (Maryland) in late 2003.

This is an evolutionary process for some communities, with incremental changes in zoning densities occurring over a period of time. Calvert County (Maryland) is an example. In adopting its first agricultural zoning in 1967, the county established a 1:3 density requirement, at that time considered relatively restrictive. In 1978, certain agricultural areas were downzoned to 1:5 in connection with the creation of a Transfer of Development Rights program. A further downzoning to 1:10 took place in 1999, and to 1:20 in 2003.

Whatever the extent of individual revisions in density standards or other regulations, they are important decisions for the communities involved. The changes involve considerable deliberation by elected governing boards and others, often with much controversy. Sometimes they originate in comprehensive planning efforts that include citizen advisory groups, extensive study and inventories of local agricultural and natural resources, and discussion at public forums.

Motivations for Change: Six Case Studies

To illustrate the local conditions involved in changing parcel size and other land use requirements, we turn to six short case studies of regulatory revisions by local governments in five states. The sidebar summarizes events occurring over time in Baltimore and Montgomery counties (Maryland); townships in Lancaster County (Pennsylvania); East Amwell Township in Hunterdon County (New Jersey); Southold Town in Suffolk County (New York); and Routt County (Colorado).

Downzoning in agricultural areas occurred most often. Baltimore and Montgomery counties, the townships in Lancaster County and East Amwell Township all decreased their residential densities in agricultural or rural zones.

In the other two cases, however, local governments adopted another technique—giving landowners seeking to subdivide farmland the option of concentrating residential development into relatively small clusters. Southold Town offered its conservation subdivision option as an alternative to unpopular downzoning, and Routt County created its land protection subdivision option to get around Colorado's limitation on parcel size requirements in local subdivision regulations.

ILLUSTRATIVE ZONING CHANGES

Expanding Restrictive Zoning: Baltimore County. With the most restrictive agricultural zoning in Maryland, Baltimore County has had a basic 1:50 density for the bulk of its agricultural land since 1979. Under RC (Resource Conservation)-2 zoning, parcels between two to 100 acres are allowed one subdivision for two residences, with larger lots limited to one unit per 50 acres. RC-4 zoning, generally for farmland in already urbanized areas, has a 1:5 density.

The County Council in 1979 downzoned property in the RC-2 district from 20:100 to 1:50, a move opposed by many farmland owners and developers although generally supported by the non-farm population. At about the same time Baltimore County decided to participate in state funding for agricultural easements. Purchasing agricultural easements was considered a means of “easing the pain of restrictive zoning...and giving landowners some equity” (Baltimore county official). In recent decades, the dominant motivation for a series of land use regulatory changes has been the imperative to protect the rural reservoirs that supply drinking water to metropolitan Baltimore by limiting runoff from scattered residential development (American Farmland Trust, 1997, 266).

Baltimore County revised its agricultural zoning and other land use regulations several times, usually as a result of the work of citizen groups, commissioned studies, comprehensive plans and county planner recommendations. County-adopted rural zoning with 1:1 density in the early 1970s replaced lot controls by the state Health Department based on soil percolation. Four RC zoning districts were created for agriculture, reservoir protection, rural residential and deferred planning. The RC-2 agricultural zone was downsized to 1:50 density in 1979 and RC-4 zoning was amended in 1992 to include mandatory clustering. And in the late 1990s and early 2000s, the restrictive RC-2 zoning was extended to additional lands; 130,000 agricultural acres are now covered by the 1:50 density standard. In 2002 and 2004 three additional rural zones were added with extensive performance, net density and reduced density standards. Approximately 30,000 acres of non-agricultural land were incorporated into these new zones.

Multiple Townships Moving in Concert: Lancaster County. In the two decades after 1976, 39 of the 41 townships in Lancaster County (Pennsylvania) adopted agricultural zoning ordinances. In subsequent actions, most also downzoned their initial building densities in agricultural zones to 1:25, with a few going to 1:50. Today, about 350,000 acres, or about 58 percent of the county, is zoned for agriculture. This is a remarkable record on at least two counts: (1) So many independent municipalities in an area moving in concert to establish and beef up their farmland protection regulations, and (2) achieving such relatively restrictive densities, when most Pennsylvania townships in rural areas either lack agricultural zoning or have agricultural zones with densities of 1:2 to 1:10.

It was Lancaster County government that provided the incentives and prodding to bring this about. As in several other states, Pennsylvania townships possess the basic power to zone and otherwise regulate land use, while the geographically-broader county governments engage in general planning and operate most of the local agricultural easement programs. Lancaster County set the stage for the municipal regulatory changes in its 1975 comprehensive plan that identified 278,000 acres of farmland for long-term preservation. A year later, East Donegal Township became the first township to adopt agricultural zoning.

The county's agricultural easement program, inaugurated in the early 1980s, further stimulated zoning activity at the municipal level.

What explains these accomplishments? Unlike most other rural areas, political opposition to restrictive zoning in Lancaster County is minimal. Farmers and other residents are generally united in the belief that maintaining a healthy farm economy demands extraordinary land use measures. The economic condition of local agriculture, overall robust and profitable as the top farm county in the eastern United States, casts a favorable light on farmland protection efforts. The presence of many Amish farmers, as a stable force in local agriculture, also contributes to the widespread belief that the industry has a solid future in Lancaster County.

Downzoning and Litigation: East Amwell Township. Illustrating the often controversial nature of land use regulations in rural areas, downzoning efforts led to court action in East Amwell Township (Hunterdon County, New Jersey). In 1999, the township board approved revising the rural residential density standard in its principal agricultural area from 1:3 to 1:10. Included in the change was a reduction in the size of subdivided homesites and a cluster requirement calling for 75 percent of a subdivided property to be placed into open space. These were responses to the recommendation of the state planning commission, in a consistency review of the municipality's master plan and zoning, that lower residential densities be employed to match the goals of the plan for agricultural and natural resource protection.

The New Jersey Farm Bureau, representing several affected landowners and a development company, challenged the 1999 downzoning in a court case with statewide implications. After a lower court decision in favor of the township, the case was appealed to the New Jersey Supreme Court that affirmed the previous action in 2003.

The Farm Bureau had claimed that the more restrictive zoning removed a substantial part of the market value of regulated parcels and thus violated landowners' property rights. To restore landowner equity, the Farm Bureau offered an alternative zoning plan—small residential lots clustered under the old 1:3 acre density, served by onsite wastewater systems. In its defense, East Amway argued that the downzoning conformed to state policy, including avoiding the construction of wastewater systems and other infrastructure in rural areas outside of designated growth centers. As an area of scattered rural residences, the township has no public water or sewer systems.

Downzoning and TDRs: Montgomery County. Also in Maryland, Montgomery County in 1980 was able to achieve a major downzoning of agricultural land by linking it to the formation of a Transfer of Development Rights (TDR) program. Giving landowners the possibility of selling building rights to developers softened the regulatory burden of reducing allowable residential density on 92,000 agricultural acres from 1:5 to 1:25.

As early as the 1960s, county leaders took steps to protect the rural character of northern Montgomery. However, these actions, including a downzoning from 1:1 to 1:5 in 1973, did not slow down the conversion of farmland in this rapidly urbanizing county adjacent to Washington, D.C. The policy response, developed by a task force study, was the Plan for the Preservation of Agricultural and Rural Open Space that recommended a combination of the TDR technique and downzoning.

The 1:25 density is assigned to the Rural Density Transfer (RDT) zone, the sending area for the TDR arrangement. Landowners here have one development right per five acres;

agricultural easements in the sending area are created when these rights are sold and transferred to 14 receiving areas. Building ratios with the transferred rights are at five residences per acre or more, producing a large increase over the rural areas in residential density.

As elsewhere, even with the link to the possibility of landowner compensation through TDRs, the downzoning ran into opposition. A group of landowners sued the county over the creation of the RDT zone, claiming property value loss. The court, however, in 1987 ruled that the downzoning was valid, even as a stand-alone regulation without the TDR connection.

Conservation Standards in Place of Downzoning: Southold Town. Rejecting the large minimum parcel size approach, Southold Town in New York's Suffolk County instead seeks to protect farmland by offering landowners incentives to reduce allowable density and cluster residences on their rural parcels. Development applicants can now opt for an 80-60 or a 75-75 Conservation Subdivision in place of a standard subdivision, in return for reduced fees and a simpler, less time-consuming review.

Both options apply to parcels of seven acres or more. (The 80-60 version means preserving in open space 80 percent of the parcel with a residential density reduction of 60 percent of the regular 1:2 zoning allowance, with clustering. Under the 75-75 option, preservation is required for 75 percent of the parcel with a density reduction of 75 percent of the regular allowance.) In both cases, a perpetual easement is required for the preserved portion. The "primary" protection targets of conservation subdivisions—land not to be built upon—are environmentally sensitive acres, such as wetlands, beaches and steep slopes. Prime farmland, woodlands and other open space areas are considered "secondary conservation areas"; they are included in the buildable category but are to be protected through the cluster requirements.

Adoption of the Conservation Subdivision Ordinance in August 2004 by the town board was followed the following February by the removal of a moratorium on residential subdivision activity that had been in place since 2002. The moratorium was intended to hold off the accelerating demand for development and give town officials time to prepare a policy for protecting the community's rural character. Earlier a study committee of officials and citizens had recommended a goal of maintaining 80 percent of the community's remaining undeveloped parcels in open space and/or farming without suggesting specific mechanisms.

Agricultural zoning has been a politically volatile issue in Southold Township for some years. In 1986 the town board downzoned 10,000 acres of agricultural land parcels from 1:1 to 1:2 density in an effort to protect farmland and other open space in the face of increasing development pressure in that part of eastern Long Island. Three years later the town imposed a mandatory clustering requirement for parcels 10 acres and larger. Seen as radical moves at that time, these changes failed to reduce the rate of farmland conversion. Downzoning was widely criticized by landowners who perceived a negative impact on their economic return, including limiting their ability to borrow from lending institutions for farm operations and other purposes. A proposal to further decrease density on agricultural parcels to 1:5 was discussed, but was abandoned when the composition of the town board was changed in the fall election of 2001. Zoning and its potential effects on landowners' equity was the central issue in that election. An earlier downzoning to 1:5 was applied in 1989 to a small section of the town with farmland because of high water table conditions that impeded building, and not for farmland retention purposes.

Overcoming State Limitations on Local Zoning: Routt County. To work around Colorado's exemption of land divisions into parcels of 35 acres or more from local government review, Routt County in the mid 1990s added the Land Protection Subdivision (LPS) option to its ordinances. This followed several years of citizen study and action that also resulted in the adoption of the county's Open Lands Plan, the creation of its agricultural easement program and the organization of a land trust. The principal target of the activity was the prevailing residential development pattern in Routt County. Taking advantage of the state restrictions on local review, landowners seeking development tended to avoid the regulatory process by dividing their properties into 35-acre or larger homesites, resulting in scattered residential lots and the fragmentation of ranchland.

The LPS option encourages a more efficient development pattern and better protection of ranchland. It gives both the county and landowners added flexibility—more county control over ranchland conversion and procedural and development incentives to landowners. In return for expedited county review of subdivision proposals and additional residential units over the 1:35 ratio on large parcels, landowners agree to create smaller residential lots of five to seven acres apiece in clustered areas that preserve at least 60 percent of the land in open space. As well, design guidelines direct the location of residential lots to minimize impacts on agricultural operations.

Easement Connections. What were the motivations for these regulatory changes? For many communities, there was a direct or indirect connection to the formation and incentives of easement programs. Baltimore County's major shift to 1:50 density in 1979 coincided with the decision to participate in newly established state funding for the purchase of agricultural easements. That many townships in Lancaster County adopted agricultural zoning in the early 1980s was attributed to the county's requirements for acquiring easements in particular locales. And Montgomery County's 1980 downzoning to 1:25 established sending zones and hence agricultural easement opportunities for the new TDR program. Less directly, Routt County's decision to adopt its Land Protection Subdivision option also related to the formation of the county's easement program; both actions were generated by the same citizen-driven planning process that sought to reduce the impact of rural residential development on agricultural operations.

The connection with agricultural easement activity was also apparent for changes to more restrictive zoning in more than a dozen other communities served by our sample programs. In some cases, the compensatory promise of having a local agricultural easement program was used to dilute landowner and general community resistance to downzoning. It was no accident that a number of jurisdictions in Maryland, New Jersey and Pennsylvania moved to more restrictive agricultural zoning at about the time state funds were first made available for county programs—in 1977, 1983 and 1989, respectively.

The easement program manager of Carroll County, Maryland, described this connection in a recently published account:

A commitment by Carroll County government to fully support that program (state funding) was part of the selling point for adopting the zoning. In other words, if agriculture is going to be permanent we will restrict the development in the ag zone to 1:20. But at the same time we are going to give those people who want to continue farming an opportunity to get some equity out of their development right

without actually having to do the development. And that was one of the selling points in 1978. (*Farmland Preservation Report*, April 2005).

For a few other programs, the more restrictive zoning came after the local easement program was in place, primarily as a means of maintaining large blocks of farmland around easement-protected properties and avoiding incompatible development. To support its purchase of development rights program, formed in 1979, King County (Washington) in 1985 created Agricultural Protection Districts with 1:35 zoning on larger parcels.

Other Motivations for Low Residential Density. Farmland protection, however, is not the sole or even dominant reason in other cases for adopting more restrictive agricultural zoning. Interviewees singled out other factors behind the prevention of higher residential densities in rural areas. They include mandates to protect sensitive resource lands, requirements for wastewater disposal and water supply, avoidance of higher public sector costs and thus increased taxes, and keeping a community's open space and rural character.

As noted in the sidebar, in Southold Town, New York, opposition from landowners and others stopped the intended downzoning of agricultural land overall to a modest 1:5 density. But the town government was forced to impose 1:5 zoning on a small area, which included a few farms, because of high water table conditions that impeded construction on smaller residential lots. Such requirements are often the result of state or federal government environmental protection mandates. Other examples include Baltimore County, where some restrictive zoning serves primarily to protect the drinking water supply for the urbanized area including the city of Baltimore, and other Maryland counties where low-density standards protect watersheds that drain into Chesapeake Bay.

At the individual parcel level, the needs of wastewater disposal and household water supply often dictate parcel size requirements in rural areas. Even before the interest in farmland protection emerged in the 1970s and later decades, state and county health standards in the absence of public sewer and water systems required that rural residential lots be large enough to accommodate on-site septic fields and individual wells without polluting the water supply. The first downzoning actions in some rural areas were intended to meet these standards. Depending on local soil conditions, this usually meant one acre or larger minimum parcels.

...prior to 1978, the ag zone here allowed total division into one-acre lots. Whatever you could get from Health Department approval, you could develop the entire farm into as many one-acre lots as you could get on well and septic systems.
— *program director, Maryland*

Putting a lid on public sector costs also frequently shows up as a major factor behind local downzoning decisions. This avoids constructing the public sewer and water systems that more intense development would require. The same reasoning applies to heading off higher public school costs with lower residential densities, thus minimizing the influx of young families with school-aged children.

A few of our townships here have this six- or 10-acre zoning, and they believe that's going to preserve farmland ... (but the real reason is to)...keep school kids out, quite frankly. And that's not proper planning, but some of our local townships do that. — *agricultural leader, New Jersey*

Resistance to Restrictive Zoning: The Issue of Landowner Equity

Restrictive zoning and other strong farmland protection regulations would be far more common in agricultural areas if not for the intense local resistance to limiting residential options. These are contentious matters in rural communities, often becoming the dominant issue in elections for local officials. It would have been “political suicide” for local officials in their communities to pursue major downzoning efforts, because of the strong opposition to government intrusion in private property rights, said a number of interviewees. Noted a Maryland interviewee:

It was plenty controversial. There were some in the farm community who supported that, but there were a lot of landowners who basically accused us of being Communists. Downzoning their land and taking so much value away from it.
– *planner, Maryland*

Proposals to downzone agricultural land or restrict its residential uses in other ways are frequently rejected by local governing boards. Or they enact compromise versions, such as higher minimum lot sizes accompanied by setting aside additional residential units by right or for family purposes. Even in localities where more restrictive controls are eventually adopted, specific proposals are hotly deliberated, as the accounts of Baltimore and Montgomery counties and East Amwell Township above illustrate.

At the heart of these local controversies, of course, is landowner concern about losing much of the perceived equity represented by their land holdings—usually their major asset, source of current income and retirement cushion.

... one of the worst things you can do to a farmer is take away the value of his land, because when he goes to the bank to borrow for fertilizer, seeds, fuel, machinery, upgrading barns, building barns, acquiring land... there's nothing worse than having the land have no value. They recognize that. It's also their retirement; they don't want to take that away. So the farming community, while it doesn't want to encourage development, has been opposed to restricting... development on agricultural lands. – *planner, Connecticut*

Land markets of course place a higher value on farmland for its development potential, assuming accommodating land use regulations, than on its intrinsic agricultural uses.

However, limited evidence from our interviews suggests that downzonings, even in areas with heated housing markets, may in fact not appreciably reduce land values. Although we did not systematically ask about the market value effects of restrictive zoning in our initial round of interviews, most interviewees who volunteered anecdotal information on this issue reported no or minimal drops in property values. A consulting planner who worked for two New Jersey townships, that reduced more than half of the allowed residential densities on their farmland through downzoning, estimated that the land values of the affected farms suffered 10 percent decreases at the most. Strong residential demand for large rural lots, even at the 10-acre and larger sizes, propped up market values.

The actual effects of zoning changes on landowner equity remains an ongoing question. Critical of restrictive zoning, the New Jersey Farm Bureau commissioned a study in 2004 that reported land value decreases of up to 77 percent due to downzoning. It was based on appraisals conducted in six locations, including two “assumed scenarios” (*Farmland*

Preservation Report, January 2005). On the other hand, a Maryland report, published in 2003, relied on more substantive information to show no appreciable change or even higher values as a result of downzoning (Maryland Center for Agro-Ecology, Inc. 2003).

8. AGRICULTURAL ZONING: A CRITIQUE

Is restrictive agricultural zoning actually more effective than permissive zoning in protecting farmland? It seems to be, judging by what our interviewees said about the performance of their arrangements in maintaining working farms in the face of urbanization. Interviewee perceptions of course are rather subjective, but coming from persons highly knowledgeable about local land use policies and patterns they lend depth and detail to this analysis. To wrap up the analysis of how communities in the research sample use agricultural zoning, we turn to a short comparison of the perceived impacts of strong and lenient arrangements, supplemented with an analysis of the farm size implications of zoning.

Zoning That Works

That strong zoning does work to protect farmland is affirmed by interviewees representing nine of the 13 communities in the sample where restrictive arrangements prevail. The jurisdictions are Napa County and the Tri-Valley area (California), Baltimore and Montgomery counties (Maryland), King and Skagit counties (Washington), Lancaster County (Pennsylvania), Virginia Beach City (Virginia) and the Town of Dunn (Wisconsin).

(Our zoning) is actually very, very restrictive on the high end, which makes it achieve, to a great degree, what it set out to do...to continue to keep the large lands open for open space and agricultural uses, and allow some development of the smaller parcels... It's been very successful, and the most important reason is it typically keeps out major subdivisions so you don't get these tract housing developments out there, you have these little subdivisions here and there, an old house lot or a parcel there, but that can blend in with the countryside pretty well.

– *program manager, Maryland*

Evaluations of effective zoning in large part go beyond the formal standards of parcel size and allowable uses, to include local political support for such regulatory measures to protect farmland. In most of these communities, restrictive agricultural zoning has been a stable and accepted institution for many years, even decades, often with support from landowners.

We have been able, since 1968, to basically protect the land through regulation. And we have now, as you know, a 40-acre minimum on the Valley floor, and we have a 160-acre minimum on the hillsides, we have a very successful industry that is fighting for every square inch of land to plant vineyards. It is that economic success, and the obvious fact that the land was protected for the industry, that has really made it. – *agricultural leader, Napa County*

We are very unique in the way that our community is set up...planning has been around and worked, zoning has worked for us for years, so that we don't have a lot of spot zoning that would occur, everything is rural in nature. The development pattern has always come from another direction. – *program manager, Virginia Beach*

Zoning is effective also when it is consistently applied. A program manager in a Pennsylvania County describes how township officials support their policies in the face of development pressures:

If a township stands firm behind their zoned areas for ag preservation zoning, then the land isn't going to convert when developers come in and try to make that happen. And I know a couple of instances where that has almost happened, where developers came in and try to put a variance in and change the zoning...and because it was near a cluster area of farms that were protected, it did not happen.

— *program manager, Pennsylvania*

Weak Zoning

Far more communities in our sample have zoning standards that do little to protect agricultural land. Interviewees representing at least 20 easement programs were critical of the zoning policies of their local governments, at times comparing them unfavorably with the more restrictive policies of other communities. They identified three major types of weaknesses in the structure or implementation of zoning ordinances:

1. Zoning densities that are not low enough to block residential incursions and maintain efficient agricultural operations.

Zoning works at cross-purposes with our easement program. The largest zoning classification we have is agricultural, and that is one unit per 10 acres. It can be clustered down to two acres to preserve farmland, but more often than not, when a farmer sells, he sells out, and it's a very large-lot subdivision. In this economy that 10 acres is not a deterrent for somebody to buy an oversized lawn, so I think that's been at odds with farmland protection. — *planner, Maryland*

2. Zoning that is not exclusively devoted to agriculture, and thus permits too many types of uses that are incompatible with serious farming. This includes permissive standards that allow rural activities unrelated to commercial farming and mixed zones that combine residential and agricultural purposes.

...precisely the problem with our zoning code is that it allows both farming and residential uses. It's not exclusionary, it's providing rural residences at the expense of agriculture. — *planner, New York*

...certain types of land uses are allowed which are not agricultural and could have an impact on prices of farmland or just in land use in the agricultural areas. Some of the things we allow, like golf courses, those are things that compete for farmland, and so that has an impact. — *planner, Maryland*

3. Frequent exceptions to basic densities and other requirements granted by planning and governing boards, thus compromising the intent of the farmland protection policy.

One of the problems with our farmland zoning is that it allows too much residential development, I've been in these things, you can build sometimes up to four units on that 40 acres when you look at caretaker units and other things like that... — *planner, California*

Protecting Agriculture or Accommodating Rural Residences?

Combining these particular criticisms into one theme, the overall objection to permissive zoning arrangements is that they are largely ineffective responses to the problem of urban

incursions on agricultural land. They do little to combat either of the two major parts of the problem—excessive loss of farmland and negative impacts on continuing agricultural operations. Zoning may work for a while in particular places to stem the tide and keep agriculture intact, but it is a vulnerable tool easily subject to change. Much depends of course on the local rate of growth and the demand for rural residences. Rapid suburbanization has been the trend in recent decades for most of the communities represented in our sample.

Indeed, a generalization that many interviewees offered is that zoning in most agricultural areas works more to accommodate rural residential development than to retain productive and profitable farms. This is apparent in the communities where agricultural land is treated as a transitional land use on the way to ultimate development, marked by the absence of agricultural zoning or any zoning at all. Even where explicit agricultural zoning regulations are in place, the typical residential densities of less than 25 acres noted above often lead to splitting farm parcels into five, 10 or 15 acre or similarly-sized lots, much smaller than the original farms but attractive for residential purposes. Some local governments try to head off this kind of land fragmentation by using cluster zoning and other techniques. Most often, however, these are optional rather than mandatory tools and are minimally applied.

Residential Proliferation. Permissive zoning invites the proliferation of rural residences on large lots in many communities. Some non-farm country residents in such situations may grow a few vegetables and raise some animals, but they are not engaged in serious agriculture.

... you have this spread out of people, who want their five-acre spread, their first farm, their little ranchette, farmette, whatever, and they're not really farmers. And I think that the zoning, by allowing five-acre densities, over extensive areas of the county, or even 10-acre density...All you're really promoting are five-acre homesites surrounded by brush ... That's not an economic land size for agriculture. — *planner, Washington State*

So you have this six-acre farmette. That is supposed to preserve farmland? From my standpoint, it doesn't. It just carves up larger pieces of land with fences... It just has a very, very negative impact on the agricultural economy. — *agricultural leader, New Jersey*

Implicit in these comments is the view that such patterns are an inherently inefficient form of land use, consuming far more farmland acres for housing than would be the case with more concentrated and higher density development.

The municipalities are waking up to the fact that building all these houses is a losing proposition, in which they then have to build more schools and other public facilities....Some of them now are trying to counter that by rezoning to (larger) five- and 10-acre lots, which to me is rather absurd. You'd be much better off having the growth in smaller lots, and in more concentrated areas, in particular areas, and then saving the farmland. — *agricultural leader, New Jersey*

Now we're at a point where we're not building as much, but we're converting a significant amount of farmland. Part of that has to do with zoning... We could build more houses back in the '50s because we had quarter-acre zoning, so it took less

land to build more houses. Now we're developing one- and two-acre lots, so you require more land for fewer houses. — *planner, New York*

Zoning that allows large lot non-farm residences in agricultural areas usually originates in the compromises between rigorous farmland protection and the economic needs of landowners, as described earlier in the analysis of the political dynamics of downzoning. It is also justified on the basis of maintaining a community's "rural character." The argument is that scattered residences on large parcels contribute to this character by keeping out more dense and concentrated, city-like development. Some authors, however, see the purpose of zoning in such situations as serving a "suburban life style" somewhat removed from a community's rural heritage (Bowers, 2001). The rural character justification is questionable if the zoning that produces the scattered, large residential properties also reduces the number and viability of working farms, a key feature of traditional rural landscapes.

Affluent Homebuyers. Even restrictive zoning at very high minimum parcel sizes does not always guarantee adequate protection for continued farming. This challenges the assumption that large minimums for agricultural zones, typically more than 25 acres, discourage residential buyers because larger parcels are more expensive to purchase. Land market forces in some localities suggest otherwise. Usually these are high amenity areas, where farms possess very attractive scenic and other natural resource and recreational values, generating a market demand from affluent buyers seeking to establish primary or secondary homes. Indeed, the demand may be the greatest for easement-protected parcels, or those immediately adjacent, because of the certainty that the natural amenities will be protected over time.

Examples from such high-amenity areas in our sample include the Pacific coast hills and valleys of Marin and Sonoma counties (California), the Napa County (California) hillsides overlooking the nation's premier vineyard valley, the mountain ski landscapes of Gunnison and Routt counties (Colorado), and Peninsula Township (Michigan) with its vistas of Lake Michigan in two directions.

The three California counties listed above all have very high parcel size minimums in their agricultural zones, ranging between 1:40 and 1:160, the most restrictive zoning in our sample. But they are also located on the edges of the San Francisco Bay Area with its numerous millionaires in the electronic and other high-tech industries.

You have people who are well-to-do, they come up to _____ County, they want to buy a sizeable parcel for a horse ranch, and so on. We feel pretty strongly that once that starts to happen across the landscape, those lands are never going to go back to grassland, livestock, dairy and those kinds of agriculture. — *program manager, California*

_____ has some of the most expensive real estate in the country, and there are buyers who will buy land even at the ag 60 zoning. They will buy the 60 acres just for their own privacy, maybe to have a couple cows, but it's not really agriculturally used. — *planner, California*

In part to limit the disappearance of commercial dairy and ranch operations on large parcels purchased for homesites, Marin County requires that management plans for continued agricultural use be part of the approval of new residences proposed for such sites. Other restrictions in the same vein, proposed in some counties as ways of discouraging affluent

buyers, include strict use requirements in agricultural zones to prevent the construction of ancillary structures and limiting the size of new residences on easement-protected parcels.

Zoning and Farm Size

The final part of this critique is to point out that agricultural zoning in most communities has little relation to the production realities of farming. Zoning truly intended to help local farms survive and profit in urbanizing situations should have much larger minimum parcel size standards than is now common (Cordes, 2001; Daniels, 1993). Minimum parcel requirements in the great majority of our sample communities are considerably smaller than actual farm sizes—in most cases by a factor of five or more. We see this in a comparison of zoning standards with average farm size in the sample counties and states.

Table 6 summarizes this comparison for the 41 jurisdictions (counties and towns within sample counties and states) for which average farm size information is available from the 2002 Census of Agriculture. Differences between zoning-designated parcel size and average farm size are much smaller for jurisdictions with restrictive than those with permissive zoning arrangements.

In places with restrictive zoning, average farm size is five times larger than the average parcel minimum. (Parcel minimums actually exceed average farm size in two counties—Sonoma County, California, and King County, Washington.) By comparison, in communities with permissive zoning, average farm size is almost 26 times larger than the average parcel minimum.

Census averages of course mask what may be considerable variation in farm size. In each county and state surveyed, there are small farms with acreages approximating the zoning requirements as well as much larger farms. Some small farms may be efficient and productive, especially if they grow high-value specialty crops and market to nearby urban areas. But it is probable that most small farms, especially in the suburbanizing environment characteristic of most of the localities in the research sample, are either not commercially viable or are farmed as part of larger operations. Furthermore, the Agricultural Census definition of a “farm” is rather minimal. It is an operation that earns \$1,000 or more of agricultural products per year, which includes many “hobby” or part-time farms. Certainly the general trend in agriculture in the United States for some time has been toward larger farm size, as the most productive agricultural operators expand by absorbing smaller farms. For the 41 counties and states included in the calculations listed in Table 6, average farm size dropped by 17.5 percent over the 20-year period of 1982 to 2002, according to the Census of Agriculture.

Parcel size standards under zoning furthermore do not recognize the land requirements of different kinds of agricultural operations in the local area, with the exception of the few cases (mostly in California) where separate parcel size requirements distinguish between crop production and cattle grazing and sometimes between irrigated and dry land farming. The history of the origins and evolution of zoning standards in most communities suggests that that they have been developed without much attention to the production realities of local agriculture.

TABLE 6
AGRICULTURAL PARCEL SIZE ZONING AS COMPARED TO AVERAGE FARM SIZE, JURISDICTIONS WITH RESTRICTIVE AND PERMISSIVE ZONING

Zoning Distinction	Minimum Requirement in Acres in Agricultural or Rural Zones¹	Average Size in Acres for All Farms, 2002	Average Size in Acres for Just Farms in Cropland, 2002	Average Farm Size Compared to Zoning Parcel Size² (times larger)
12 Easement Programs with Restrictive Zoning	42.9 Average Range of 15 – 320 acres	271.8	151.0	5.5x
29 Easement Programs with Permissive Zoning	10.5 Average Range of 31 – 1 acres	161.6	111.9	25.9x

SOURCES: Tables 2 and 3 for parcel size minimums, 2002 Census of Agriculture for farm size averages.

¹ For programs with multiple planning jurisdictions (towns in New Jersey, Pennsylvania, New York, Connecticut, Massachusetts, and Vermont; counties in Delaware), the number used for the overall average is what interviewees estimated as the “typical” parcel size for the multiple planning jurisdictions.

² The calculation of this average is just for cropland farms, with the exception of three counties where the calculation is based all farms because of the domination of large cattle ranches.

9. URBAN GROWTH BOUNDARIES AND OTHER LAND USE TOOLS

Besides general plans and agricultural zoning and its related techniques, a variety of other land use tools are available to local governments for farmland protection purposes that also have the potential to complement easement programs. Here we focus on three techniques—boundary controls, Transfer of Development Rights (TDRs) and development mitigation. Boundary designations of one sort or another that attempt to direct the path and extent of urban growth are a part of many local government planning programs. TDRs and mitigation are more sparsely used as farmland protection devices.

Urban Growth Boundaries

Because they have a simple and decisive premise, urban growth boundaries are attractive to decision makers, planners, land conservationists and proponents of “smart growth.” Drawing lines on a map to limit the future direction and extent of urbanization in a community or region implies that the lands outside the boundaries will remain intact in agriculture and other rural uses for some time. Growth boundaries are proactive in addressing the sources of the urban pressures on farmland, more so than agricultural zoning that targets the results of the pressures. Boundaries typically deal with large landscapes as compared to the more localized, parcel-specific effects of zoning. Notwithstanding all these desirable objectives, the critical dimension of the boundary technique concerns its enforceability—how the mapped lines are actually implemented to hold urban growth in check and protect farmland.

Boundary Variations. Local governments corresponding to more than half of the 46 agricultural easement programs in our sample claim to have growth boundaries of one sort or another in place. Most California, Colorado and Maryland counties in the sample, and some of their municipalities, use growth boundaries in their planning programs. They are less common elsewhere.

Many boundaries are essentially just policy statements in planning documents supported by maps, with little evidence of sustained application to land use activity. But others have substantial impact, functioning directly to constrain urban growth. Six examples of such boundaries among our sample jurisdictions, with implications for farmland protection, are described in Table 7. In territorial terms, this short list illustrates three types of boundaries:

1. A single boundary with a regional impact because it encompasses or confines a large urbanized area, such as the long urban-rural demarcation in Baltimore County. A similar but less extensive configuration is the green line in the city of Virginia Beach.
2. Multiple growth boundaries in a county, surrounding individual municipalities, such as the lines in Sonoma, Boulder and Lancaster counties.
3. Community separators or “green belts” between nearby but non-adjacent municipalities, intended to preserve in-between agricultural land in part to block the cities from growing into each other and allow each to retain its independent geographical identity. Thus an intergovernmental agreement between the county government and the two cities provides for an emerging separator between the cities of Davis and Woodland in Yolo County.

**TABLE 7
ILLUSTRATIVE URBAN GROWTH BOUNDARIES**

Jurisdiction	Name/Origins	Extent/ Restrictions/ Duration	Connections to Easement Program
CA – Sonoma County	URBAN GROWTH BOUNDARIES – created for 8 of 9 cities in Sonoma County by voter initiatives (ballot measures), starting in the early 1990s.	Surround cities outside or coterminous with city boundaries, allowing limited growth. Limit urban development to inside boundaries, with different definitions of “development.” 20-year duration, with possibility of voter renewal.	Limited. The Sonoma County Agricultural and Open Space District does not seek easements within the urban growth boundaries.
CA – Yolo County	COMMUNITY SEPARATOR between cities of Davis and Woodland, created by 2002 agreement between cities and county.	Agreement identifies a two-mile corridor containing 11,000 farmland acres between the two cities (whose formal boundaries are seven miles apart) to be preserved as a community separator or “greenbelt.” While not formally binding, the agreement prevents the two cities from growing into each other and restricts county approval of urban development within the corridor. Indefinite duration.	Locating easements within the community separator is a priority for the Yolo Land Trust. An emerging block of agricultural easements already exists within the corridor.
CO – Boulder County	PLANNING AREA BOUNDARIES – created through county-city intergovernmental agreements in 1990s.	Surround all but one city in the county. Provides certainty as to future areas of city annexation and growth. County agrees not to acquire ag easements and other open space within boundaries. 10-year agreements between individual cities and cities and county government, binding under state law. A “super” countywide agreement encompasses all the arrangements.	Keeps easement prices low outside boundaries. Program priority to put easements on boundary edges. Agreements “give us 10 years” to get land protected.
MD – Baltimore County	URBAN-RURAL DEMARCATION LINE – mid 1970s by county planning board	155-mile long boundary encompassing 130,000-acre urbanized area and preserving 259,000 acres of resource and agricultural lands. Prohibits extension of water and sewer services and other public infrastructure to resource area. Indefinite duration.	Preceded easement program. No easements inside boundary. Acquisition points given to ag parcels on edge of boundary. Number of easements help firm up boundary.

Jurisdiction	Name/Origins	Extent/ Restrictions/ Duration	Connections to Easement Program
PA – Lancaster County	URBAN GROWTH BOUNDARIES – over time by towns and boroughs, with assistance from the county.	Surround many individual municipalities, especially around the city of Lancaster and suburban towns, the county’s major urban area. Restriction on extension of sewer and water services and other growth limits depend on individual municipalities.	Location outside boundaries is one factor in easement acquisitions. Clusters of easement-protected farms edge some boundaries.
VA – Virginia Beach City	URBAN SERVICES BOUNDARY, the “Green Line” – created by city ordinance in 1979 as result of comprehensive planning process.	20-mile long boundary extending across width of city, from adjacent city on west to Atlantic Ocean, separating northern urban area from the Agriculture Reserve on the south. Prevents extension of public sewer and water service to the south. Indefinite time duration. More recently a narrow transition zone was added to the southern end of the green line, allowing limited low-density development with developer provided infrastructure and open space requirements.	Preceded easement program. Easements only in the Agricultural Reserve, south of the green line. Program is accumulating a block of easements on the southern edge of the transition zone—800 acres so far.

Sources: Interviews and planning documents.

Some local governments employ other kinds of geographical growth limitations. For example, California cities are required by state law to have “Spheres of Influence” approved by local agency formation commissions (county-based boundary commissions), essentially 20-year growth areas where municipal annexations can occur as city-provided services allow. Farmland protection is supposed to be a priority in the periodic updating of sphere lines.

How they work. How are the growth management purposes of the boundaries enforced or carried out? Three types of growth-restraining mechanisms are represented by the examples listed in Table 7:

1. Most common (Baltimore County, Lancaster County, Virginia Beach) are restrictions on the expansion of public services, particularly water and sewer systems, to areas outside the boundaries—in effect blocking intensive or high urban development. Not included on the Table 7 list are the adequate public service ordinances that some counties in Maryland and other states employ to keep the rate of growth in line with local public service capacities. Such policies appear to be less proactive and future-looking than genuine growth control boundaries. Adequate service requirements are reactive and temporary—typically putting a moratorium on further development in a locality when school enrollments, traffic counts or other measures of service capacity exceed certain limits.
2. Growth boundaries in other arrangements (Sonoma County, Boulder County) confine the formal expansion—annexations—of incorporated municipalities (cities, townships) or other urban areas. Indirectly, they limit the extension of urban public services.
3. Finally, there are boundaries that implement formal agreements among the local governments in a region defining their respective growth areas, with the major purpose of eliminating inter-jurisdictional competition for territory. They can also specify agricultural or other rural areas in the region to be preserved, as in both the Boulder and Yolo county agreements described in Table 7. The agreements can be simple bilateral deals between two municipalities or a county and a municipality, or more complex agreements among a larger number of local governments. Boulder County’s planning area boundaries reflect agreements among nine cities and county government, capped by a “Super Intergovernmental Agreement” encompassing all the separately negotiated deals.

In most of the cases described in Table 7, the boundaries have local legislative status and are formally binding. Most originated in ordinances enacted by county or municipal governments. The illustrations also include voter-initiated and approved measures and boundaries established through intergovernmental agreements.

Easement Connections. Where firmly executed, growth boundaries complement agricultural easements. The relationship is mutual. On the one hand, a growth boundary is a guide to positioning new easements for maximum impact on urban expansion. It defines the area where placing easements would be counterproductive—inside the line where urbanization is occurring and is slated to occur in the foreseeable future. At the same time, a boundary identifies a location where it makes strategic sense to concentrate easements—in a continuous belt along the rural side of the line.

Likewise, strategically placed easements enhance a boundary's purpose as a growth management technique. When located in a contiguous fashion along the rural side, a block of easements provides a firm and possibly permanent structure to the boundary. Indeed, easements placed in this way make it difficult, if not impossible, to revise the boundary outward in the future. The permanence of the easements is passed on to the boundary. This is a strategy that Lancaster County (Pennsylvania) and a few other jurisdictions have employed.

When effective? Complementing the strategic impact of agricultural easement programs is certainly an effective use of urban growth boundaries. We can also single out other indicators of success related more generally to the pattern of urbanization in a community or region.

One test is longevity. Some boundaries have been in place, unchanged or with minor revisions, for two or more decades. Examples include Baltimore County and Virginia Beach City, and other jurisdictions not listed in Table 7—among them, Carroll, Howard and Montgomery counties in Maryland. It is not clear, however, how consistently each of these enduring boundaries have constrained urban growth and protected farmland over the years. Interviewee comments from Baltimore and Carroll counties do suggest that their boundaries have minimized growth impacts on farmland. In Baltimore County, for example, no new schools have been built outside the urban-rural demarcation line for some time and in recent years only 15 percent to 16 percent of the county's new residential units have appeared outside the line. Likewise a Carroll County interviewee reports that the proportion of total residential development located outside of eight planned growth areas steadily decreased over a 20-year period from more than 50 percent to about 20 percent, directly lowering the rate of farmland conversion.

Achieving the intended result of concentrating the major part of an area's urbanization within a growth boundary is enhanced by specific actions that make development options more attractive in or around existing urban cores. Such an urban growth policy directly complements a farmland protection policy. This is one of the major themes of the "Smart Growth" agenda that has been so dominant in nationwide planning and growth management circles since the early 1990s (Sokolow, 2005). Thus, several counties and other jurisdictions in our sample back up their boundaries with infill and higher density incentives. Planners in two Maryland counties offered these comments:

...maintaining the rural character and agricultural base with the demarcation line does put additional pressure on making our inner neighborhoods...more livable with redevelopment opportunities... — *planner, Maryland*

...we are increasing the density at metro stations, where we are pushing for mixed-use development with housing jobs and retail all placed together. And by creating that additional density outside of the agricultural areas, we take some of the pressure off those agricultural areas in terms of people. — *planner, Maryland*

A final observation concerns a major limitation in the boundary technique. While they can effectively check the spread of high-density urbanization characterized by large residential neighborhoods, shopping centers and office concentrations, urban growth boundaries do not prevent the leapfrog of scattered- and low-density residences in the countryside—frequently the more serious threat to agricultural operations. Boundary policies that limit the extension of sewer and water services or municipal annexations by themselves cannot stop the

development of large residential lots served by individual wells and septic tanks. But they work better when paired with restrictive rural zoning, a combination that addresses both intensive and extensive forms of urban development.

Transfer of Development Rights

Transfer of Development Rights (TDRs) are a market-driven technique that relies on the voluntary exchange of development rights between rural landowners and urban developers (Schiffman, 1999, 130). TDRs can minimize the conversion of rural lands by transferring the potential for development from areas where agricultural or other resource lands are to be preserved to areas where concentrated and high-density growth is desired. Developers compensate landowners for their rights according to market rates, usually resulting in the placement of perpetual easements on the preserved land.

To implement TDR programs, local governments typically establish sending (preservation) and receiving (urban development) areas, with low- and high-density zoning respectively, and a formula by which rights are transferred from the one to the other. Where used effectively, TDRs are both a strong land use tool for directing and confining urban development and a source of additional easements.

TDRs are applied to a wide range of natural and man-made resources besides farmland. Among the preservation targets, according to a national study of the technique, are historic buildings and landmarks, cultural facilities, downtown revitalization, rural character, open space and various types of lands with environmental values (Pruetz, 2003, 36-46). This study counts more than 50 TDR programs with farmland protection objectives, either exclusively or combined with other purposes, second only to environmental protection.

At least 12 of the agricultural easement programs in our national sample are located in jurisdictions that have TDR arrangements in their repertoire of land use tools. The technique has been used only minimally in most communities. The leaders in our sample are Montgomery and Calvert counties (Maryland), with accumulations of 48,500 and 11,200 TDR acres, respectively, as of 2005.

Montgomery County's TDR program is the most successful in the nation (Pruetz, 2003, 208-212); the county also has acquired more agricultural easement acres than any other local program, with TDRs representing 75 percent of the 65,000 acres preserved. The program protects a 100,000-acre block of farmland in the northern part of the county, preventing low-density residential sprawl and concentrating development in high-density urban areas. Created in 1981 at the same time the major agricultural area was downzoned to a 1:25 density with a cluster arrangement, the program operates with a large rural sending area and 14 small receiving areas intended for urbanization. Development rights are transferred at a ratio that results in a five-fold increase in development density in the receiving areas.

Calvert County's TDR program also has impressive numbers in acres put under easement. However, compared to the Montgomery program, in qualitative terms it has been somewhat less effective in protecting farmland and limiting low-density urbanization. The reasons, according to a critique of the program, include a loose and overlapping designation of sending and receiving areas and the absence of restrictive zoning in agricultural areas intended for preservation (McConnell, 2003).

The lessons from these two examples suggest several general conditions under which TDRs can work effectively: (1) Clearly-designated separate sending and receiving areas; (2) used with restrictive agricultural zoning; (3) transfer ratios that substantially increase and concentrate development in receiving areas; (4) and market incentives for both landowner/sellers and developer/purchasers of rights.

Development Mitigation

In this technique, local governments require that development proposals that would convert farms or other resource lands have these impacts “mitigated” or compensated for. As a condition of getting their projects approved, developers have to pay for the preservation of comparable—in size and/or quality—farmland elsewhere in the area. In effect, development pays for putting perpetual easements on other farms, either directly by selecting specific parcels for the purchase of development rights or indirectly by paying into a fund controlled by a public agency that selects the farm properties for preservation.

Mitigation is similar to the TDR technique in three major ways. First, both impose the costs of easement acquisitions on urban development. Second, areas to be preserved are usually separated from areas to be targeted for development. Third, as well as adding to the holdings of agricultural easement programs, both techniques are generally intended to confine urban development.

Mitigations are used nationwide to preserve habitat lands, because of federal and state engendered species regulations. They are used less frequently for farmland protection. As far as we can tell, only five of the agricultural easement programs in our national research sample have had any experience with the technique. They are the Yolo Land Trust and the Tri-Valley Conservancy (California), Boulder County (Colorado), King County (Washington) and Vermont state government.

The mitigation arrangement in Vermont is notable because it involves the control over certain kinds of land development proposals by regional bodies acting for state government—unusual because such responsibilities nationwide are almost universally in the hands of local governments. Under the state’s Act 250, district environmental commissions approve or deny pre-construction permits for subdivision and development projects according to 10 impact criteria, including whether they “significantly reduce the agricultural potential of primary agricultural soils” on the site (Vermont Department of Agriculture, Food and Markets, 2003). Under strict proof that “feasible alternatives” to the project are not available, the project applicant can mitigate the impacts by compensating the state for the costs of acquiring agricultural easements elsewhere in the same region at a ratio of at least one acre to be preserved for every acre converted. As of 2005, almost \$2 million in mitigation fees had been collected by the Vermont Housing and Marketing Board, with \$1.2 million spent in combination with other funds to put easements on more than 9,000 acres.

The California mitigation programs also are the product of a state-required environmental review process. For the past three decades, the California Environmental Quality Act has required municipal and county governments to review and consider ways of mitigating the negative environmental impacts of proposed development. Impacts that could result in farmland loss or adversely affect continued agricultural operations are included in the law’s scope. Also contributing to the mitigation interest here is the longstanding acceptance among local governments and their constituents in having new development pay its full public sector costs, whether for public services, transportation congestion or the loss of open

space—in part a result of the constitutional restrictions since 1978 on local use of the property tax and other revenue sources.

In both of the two California mitigation examples in our sample, nonprofit land trusts acquire easements through development mitigations required by local governments. Mitigations flow either from ordinances that apply across the board to development proposals or from negotiations over specific projects between local governments and developers. Details follow:

- The Tri-Valley Conservancy in Alameda County receives easements as a result of three separate city and county mitigation arrangements. One involves a fee of \$15,000 per new residence collected from the developers of a large upscale subdivision.
- So far, the Yolo Land Trust has acquired about 1,300 acres of agricultural easements in a dozen different mitigation-driven transactions. The largest share has come from the city of Davis mitigations of farmland annexed for development purposes. Davis was probably the first municipality in the nation to enact and begin implementing such an ordinance in 1995. Originally the Davis program required a 1;1 mitigation, calling for acres preserved equal to the number converted; in 2002, this was increased to a 2:1 ratio, two acres preserved for each acre converted. There are other farmland mitigation arrangements in Yolo County that involve another city, county government, and the Yolo Local Agency Formation Commission which reviews and approves city annexation proposals.

A key feature of the mitigation programs in both California counties is the deliberate location of easements in relation to the path of urbanization. All the mitigation-derived easements accepted by the Tri-Valley Conservancy are concentrated in a small agricultural valley rimmed by city areas on two sides. Davis policy requires that the preserved acres be located within the city's general plan area that extends four to five miles out from the city limits.

Are development mitigations a promising farmland protection technique worthy of broader application? Combining the control of urban growth with agricultural easements, they certainly have the potential to be an effective farmland protection tool. In practical and political terms, however, there are serious obstacles to extending the technique to many other jurisdictions. In particular, few places in the nation have state or local political cultures that support, as strongly as in California and Vermont, the principle that new urban development should pay for the costs of its impacts on environmental resources.

10. STRONG AND WEAK LAND USE REGULATIONS

Leaving aside the combined effects of planning and easements, what does the record say about the independent impact of planning policies and regulations? We sort out the 46 agricultural easement programs in the national sample according to the quality of local policies and regulations, based primarily on what the people we interviewed said about these patterns. While zoning, general plans and other techniques are in widespread use, in only a few communities are these measures truly restrictive and applied rigorously and consistently.

Strong and Multiple Land Use Measures

Twelve jurisdictions stand out from all others in the sample, in our judgment, in the overall strength and integrity of their local government regulatory measures. They are listed in Table 8 with the details of pertinent policies.

What defines the places with exemplary farmland protection policies is both the restrictiveness of their individual policies and, in almost all cases, the combination of two or more sets of strong policies in a complementary manner. Usually restrictive agricultural zoning is paired with enforceable urban growth boundaries, merging small-scale and large-scale approaches to farmland protection. While zoning addresses the residential densities and allowable uses of individual farm parcels, growth boundaries target the larger rural landscape of a community or region. One enhances the effectiveness of the other. In particular, growth boundaries that have teeth, and thus are more than general plan intentions, help to fend off changes to zoning that is protective of individual farms (Cordes, 2001). They do this by confining urban development and preventing its spread in a sprawl-like fashion, acting proactively to send the message to the public about where urban growth can and cannot occur in the long term.

Other land use policies identified in Table 8—less widely used but specific to individual programs—also work in conjunction with agricultural zoning and growth boundaries. They include intergovernmental agreements (often the basis of growth boundaries), mitigation for farmland conversion, cluster requirements that concentrate high-density development and California's version of preferential property taxation for farmland that prohibits development for renewable 10-year periods.

Comments from interviewees representing the easement programs in these communities or knowledgeable about local planning policies generally confirm the effectiveness of these regulatory arrangements in protecting farmland. As well as referring to the specific policies in place, they point to the consistency of local governments in applying the zoning and other policies over time.

TABLE 8
LOCAL GOVERNMENTS IN SAMPLE WITH STRONG AND MULTIPLE LAND USE TOOLS

Local Government	Agricultural Zoning (Residence per Acres)	Urban Growth Boundaries	Other Tools
CA – Marin County	1:60 (rural agricultural corridor and coastal agriculture)	(1) City spheres of influence. (2) Designated agricultural preservation area.	(1) Agricultural management plan required for approval of residence on ag parcel. (2) Restrictive preferential property taxation.
CA – Napa County	Agricultural Reserve (Valley floor)–1:40 (valley floor); 1:40 – 1:160 (watershed and hillsides)	(1) City spheres of influence. (2) City of Napa Rural-Urban Limit Line.	(1) Voter-approved limitation on agricultural rezoning. (2) Voter-approved cap on building permits in unincorporated areas. (3) Restrictive preferential property taxation.
CA – Sonoma County	1:20 – 1:100 (land intensive agriculture)	(1) City spheres of influence. (2) Voter-approved growth boundaries. (3) Community separators between municipalities.	Restrictive preferential property taxation.
CA – Alameda County – South Livermore Valley	1:100 (vineyard agriculture)	(1) City spheres of influence. (2) Voter-approved growth boundary for City of Livermore.	(1) Intergovernmental agreement on growth direction. (2) Mitigation for farmland conversion. (3) Restrictive preferential property taxation.
CA – Yolo County	1:80 (irrigated cropland); 1:160 (other cropland); 1:320 (grazing land)	(1) City spheres of influence. (2) Community separator between two growing municipalities.	(1) Intergovernmental agreements on growth direction. (2) Mitigation for farmland conversion. (3) Restrictive preferential property taxation.
CO – Boulder County	1:35 (agriculture district)	Planning area boundaries surrounding municipalities.	Intergovernmental agreements on growth direction.
MD – Baltimore County	1:50 (agriculture protection zone)	Urban-Rural Demarcation Line	People’s Council for defending county land use regulations in court.
MD – Montgomery County	1:25 (rural density transfer Zone)	Urban Growth Boundaries	TDR program
PA – Lancaster County	Varies by township, with 1:25 typical, up to 1:50	Urban Growth Boundaries surrounding municipalities.	Township TDR programs
VA – Virginia Beach City	1:15 (based on soil type)	Urban Services Boundary.	
WA – King County	1:35 in most cases, 1:10 for lots under 35 acres	Urban Growth Boundary	Mitigation for farmland conversion
WA – Skagit County	1:40 (agricultural /natural resource zoning)		

Sources: Interviews, language of zoning ordinances.

Several other communities in our sample approach those listed in Table 8 in the strength of individual policies, but are not comparable either in the consistency of policy application or in the interconnections among complementary measures. Included are Monterey County (California) and the Town of Dunn (Wisconsin), both with relatively restrictive zoning policies, and Carroll County (Maryland) with growth boundaries around several urban cores.

Municipal governments (towns and townships) are less likely than county governments to have strong policies in place. In fact, the only municipal governments listed in Table 8 with strong and multiple policies are the townships in Lancaster County (Pennsylvania) and Virginia Beach City. One likely explanation is that town and township governments serve relatively small locales in which face-to-face political relationships make it difficult for officials to restrict their neighbors' property options. The political opposition to land use regulations is less intense at the larger and more impersonal county level, where professional planners have more influence and planning has a more regional perspective.

Weak or Minimal Farmland Protection Policies

By contrast with the 12 exemplary cases identified in Table 8, most of the other agricultural easement programs in our sample operate in communities with well-intentioned but weak farmland protection policies. In common, they have minimally-restrictive land use controls on the spread of urban development. Among the program managers and others we interviewed for the project, far more identified lenient than strong farmland protection policies in their communities. They were especially critical of the ineffectiveness of zoning arrangements, as Chapter 8 demonstrated, pointing to weaknesses in parcel size requirements, allowable uses and excessive exemptions in how zoning policies are applied.

The source of lenient land use policies is easy to detect. Adoption of more restrictive measures is blocked by their political unpopularity. Elected officials and other leaders in communities avoid taking actions that reduce, or appear to reduce, landowner equity and development options. And even when modestly more restrictive policies are adopted, as we have seen in some cases of downzoning, they are compromised by allowing landowner exceptions in particular situations. Such considerations dilute the laudable goal, expressed in most land use plans, of maintaining the local farmland base.

Active easement programs in some communities are seen as taking over the land use role of planning and zoning. More landowner-friendly than land use restrictions, easements in such cases serve as a substitute for stronger regulatory measures (Bowers, 2001). One interviewee, familiar with an easement program that has spent considerable local tax dollars on acquisitions, characterized the local substitution in this way:

We have good PDRs but terrible zoning... The county accommodated the farmers who were complaining about value, and about taking away their rights by downzoning, so they basically let the zoning stay pretty crappy. So essentially the county is trying to buy their zoning. They are just trying to buy their way out of bad land planning. — *appraiser, Maryland*

The origins of a number of agricultural easement programs demonstrate this point. When state funds for easement acquisitions first became available to local governments in the late 1970s and 1980s, many county governments in Maryland, Pennsylvania and New Jersey quickly jumped on board and organized their programs. Often the funding opportunity and the easement technique were seen by local leaders as a quick fix for the problem of

urbanizing farmland, an issue growing in popular appeal at that time. Compensating landowners for their development rights thus was a way of avoiding the burdens and political risks of stronger land use regulations.

Making a Difference?

Can we say that strong land use regulatory policies actually have more success than relatively lenient policies in protecting farmland from urbanization? Some confirmation of this difference comes from interviews and Census of Agriculture and other data, although the evidence is sketchy. The limited scope of our research did not allow a more detailed and systematic examination of policy impacts.

Perceptions. In responding to questions about local land use trends, program managers and other interviewees representing jurisdictions with restrictive policies were more likely than others to say that policies had positively affected local growth patterns. The difference was greatest in response to a question about whether local regulations had reduced the rate of farmland conversion. Positive comments came from at least two interviewees from each of 18 jurisdictions—a little more than half (seven) of communities with strong policies and only one-third (11) of places with lenient policies, as identified in Table 8. Other questions that elicited similar but smaller differences concerned the impacts of policies on redirecting or blocking urban growth and on stemming residential development.

In most cases, however, interviewees were commenting on the combined effects of regulatory policies and agricultural easement programs—not just the separate effects of zoning and other regulatory measures.

I think that the farmland preservation program (easements), along with the county and township comprehensive plans, have definitely slowed down the rate of conversion. — *appraiser, Pennsylvania*

Other comments suggest that regulatory policies in some places are independently effective. Interviewees representing six communities volunteered the observation that long-standing land use policies in their communities, in place before the local agricultural easement programs became firmly established, had been more effective than the easements in protecting farmland. The pertinent localities are Napa and Yolo (California), Baltimore (Maryland), Cumberland (New Jersey), and King (Washington) counties, and Dunn Township (Wisconsin). All but Cumberland are jurisdictions with restrictive planning policies.

Objective Measures. More objective indications of differences between strong and weak policies in their impacts come from several sources of quantitative data on farmland trends.

A starting point is what the U.S. Census of Agriculture reveals about changes in farm acres. The Census is the federal government's count every five years of the number of land in farms, number of farms and a variety of other agricultural characteristics. For the 20-year period of 1982 to 2002, Census numbers show that counties in our sample with strong land use policies on average lost less farmland than counties with weak policies, although the difference is not striking:

- Average 14.4 percent decrease in farm acres for the 11 counties with strong land use policies.

- Average 18.3 percent decrease in farm acres for the 26 counties with weak land use policies.

These numbers are only a rough indication of policy impact differences, since the Census of Agriculture's count of acres does not separate urban conversions from other sources of change in agricultural acres, including additions and reductions in the farms recorded in the Census sampling.

We chose not to use data from another federal agency source, the National Resource Inventory (NRI) conducted by the USDA's Natural Resources Conservation Service every five years. Based on sample points throughout the nation, the NRI shows trends for a large number of land use categories, including changes from several types of agricultural to several types of urban categories. Despite the availability of conversion numbers, however, county-level information from this source is not reliable because of the sampling technique used, as suggested in a critique of NRI findings for California (Sokolow, 2001).

More precise tabulations of farmland conversion trends are found in data collected by state government agencies in Maryland and California. The Maryland Department of Planning maintains an extensive database on individual parcels, including changes in land use as recorded in land records. California's Farmland Mapping and Monitoring Program, administered by that state's Department of Conservation, uses aerial photography to track every two years the urban conversion of agricultural land.

In Maryland, a 2004 report by the DOP finds that counties with relatively restrictive zoning and other land use controls are more effective than other counties in preserving agricultural and other rural lands. The measures of effectiveness include the fragmentation of agricultural lands, contiguity of preserved land and the proportion of land developed in agricultural zoning districts. Most significant is the difference between Baltimore and Montgomery, the two Maryland counties with the strongest land use policies, and all other counties in the state. For example, Baltimore and Montgomery counties each experienced less than a 3 percent decrease in agriculturally zoned land to development in 1990 to 2000, smaller than the losses in other counties with significant growth pressures. By contrast, Howard County—one of the state's three most populous and urbanized counties, along with Baltimore and Montgomery—lost more than 15 percent of its agricultural zoned land to development during the same period. Howard County's land use policies are among the weakest in our sample, with less restrictive zoning arrangements than most other Maryland counties according to the report (Maryland Department of Planning, 2004).

California's farmland tracking information shows relatively small rates of farmland conversion to urban uses by county. The five counties that coincide with easement programs in our sample had an average conversion rate for cropland of only 2.6 percent during the 18-year period of 1984 to 2002 (California Department of Conservation, 1986 to 2002). On average, the five counties lost only a few hundred acres a year during this period. Four of the five counties have strong farmland protection policies, according to our analysis.

The Consequences of Weak Regulations: Inefficient Land Use

Lenient land use regulations contribute little to farmland protection. By allowing significant numbers of non-farm neighbors into agricultural areas, lenient policies lead to agricultural-residential conflicts and intrusions on farm operations. The two-way negative impacts of having scattered non-farm residents interspersed among productive farms are well known

(Daniels, 1997; Sokolow, 2003). Residences in close proximity to farms impede serious agricultural operations, forcing farmers to modify their practices in confronting vandalism, liability issues, road congestion and political challenges. Commercial agriculture, on the other hand, often is a source of discomfort and more for residential neighbors. It is an industrial-type activity that may spray chemicals, employ heavy machinery to disrupt the soil and generate voluminous quantities of waste from livestock. The impacts on neighbors include dust, noise, odor, and air and water pollution.

More concentrated forms of residential development, such as the incremental expansion of cities or other urban centers into the surrounding countryside, create relatively solid and confined edges with agriculture (Cordes, 2001). In such locations the exposure or tension points with farming are less extensive, when compared with the more scattered pattern of low-density residential development.

Low-density or no zoning that facilitates large lot rural residences wastes farmland. It consumes far more agricultural and other rural acres for housing than would be the case with more concentrated and higher density. The inherent problem is inefficient land use, the tendency in much of rural America to address residential demands by housing relatively few persons per unit of developed land and scattering them over a large landscape. Such inefficiencies affect more than agricultural production and the conversion of farmland. They harm communities and regions in multiple other ways—in increased public service costs, damage to natural resources and higher housing costs. What we note among the communities in our research sample is widely repeated throughout the United States. Most of the nation's population increase continues to be housed in relatively high-density urban concentrations. But, far more land in the aggregate has been consumed in recent decades by the much smaller number of residents moving to rural areas (Heimlich and Anderson, 2001, 17-18).

Prevailing zoning densities in rural areas are a key reason. They result from local political compromises that try to provide both a modicum of farmland protection and semi-rural residential development. In reality, they neither effectively protect farmland from development pressures nor promote efficient land use patterns. A New Jersey report that severely criticizes that state's dominant exurban and semi-rural residential development in recent years calls the trend a "race to the middle" (Evans, 2004). Municipal zoning policies are more responsible for the trend than market forces, according to the report. With typical zoning densities of 1:5 and 1:10, often generated by downzonings ostensibly intended to protect open space and rural character, localities accomplish neither land preservation—in fact accelerating the rate of farmland conversion—nor the creation of desirable mixed-use communities. In this process, the separate advantages of zoning densities at the "ends" are lost—much higher densities that can more economically accommodate the state's housing needs, and much lower densities that can more effectively preserve agricultural and other open space lands. In the race to the middle, New Jersey is "squandering the advantages bestowed upon it by its historical patterns of high-density development" (Evans, 2004, 3).

Inefficient land use of this sort clearly is at odds with the "Smart Growth" approach to the land use aspects of growth that has received so much support in planning and public policy circles in recent years. Smart Growth principles include compact growth, urban density and infill, neighborhood design and open space protection. A major premise is that what happens to the rural landscape is closely linked to what happens to inner city and other urban neighborhoods. Enhancing and improving urban cores, thus making them more attractive to new growth, is the preferred route to preserving farmland (Sokolow, 2005).

As applied to agriculture, this means that high-density residential development in compact areas has a necessary and positive role to play in farmland protection. Policies and land use techniques that seek compact and high-density development are the essential complement to maintaining farmland where it is vulnerable to residential growth. In regions where it is widely used, low density zoning restricts the supply of land for housing and increases its costs. Compact and high-density development in the same region can counter these effects and maintain housing affordability, as Mark Cordes notes (Cordes, 2001). It makes little sense from a public interest perspective to continue to support semi-rural living through the consumption of large amounts of farmland, when other and more efficient options for residential development are available.

11. MAKING THE CONNECTION

The cause of farmland protection is advanced when agricultural easement programs and local planning policies work together in a complementary relationship. They are quite different, even contrasting, approaches to controlling land use, one compensatory and the other regulatory. But the differences also suggest that, in the right combinations, each approach can add value to the other.

Easements bring to the table the power of perpetual preservation and the voluntary participation of private agricultural landowners. Planning policies are less focused, but more comprehensive than easements, and are rooted in the democratic processes of local government. There are inherent weaknesses in each approach—the non-public character of easement programs when they negotiate transactions with private landowners, and the generally short-term, transitory effects of planning policies and their applications. The respective weaknesses, however, can be modified by the respective strengths of the two approaches, melding private and public interests and making both easement programs and planning policies more effective in their separate realms.

This final chapter provides an overview of the multiple benefits of a complementary relationship, in large part culled from our interviews with easement programs managers and other knowledgeable persons and from other sources. The benefits flow in both directions, with planning policy supporting agricultural easements and easements supporting planning policy. This chapter concludes with a short set of prescriptions for enhancing the relationship.

Planning Policies Support Easement Programs

Protecting farmland from urban growth, the central objective of agricultural easement programs, is certainly an important public priority for many communities in agricultural areas. It is not the only priority, however, in the larger arena of local government efforts to manage growth. Local planning policies usually take a comprehensive view of the future consequences of current trends. They consider a wide range of growth-related issues—transportation, open space, housing, natural resources, public services, urban design, demographics, etc.—and how they fit together. When linked to this larger planning framework and its underlying democratic processes, agricultural easement programs gain public credibility and avoid the appearance of operating independently and without accountability.

More specifically, strong agricultural zoning, growth boundaries and other land use regulatory measures benefit easement programs in a number of ways pointed out by interviewees.

- 1. Reduce easement costs.** Firm urban growth boundaries and restrictive agricultural zoning protect farmland by limiting the long-term spread of urban development. In effect, they send local land markets the message that certain areas, at least for the foreseeable future, are off limits to residential and other urban expansion. The result is to reduce the speculative market value of farms in effectively preserved areas and to lower landowner expectations about the prospects of cashing out their farmland assets for development. In turn, landowners find that selling development rights to easement programs becomes a more attractive economic scenario. At the same time, programs are less pressed to compete with development in purchasing easements and can stretch their acquisition budgets further. On the downside, weak

regulations that have little credibility fail to hold market values in check, thus increasing acquisition costs for easement programs, as many interviewees emphasized.

- 2. Guide the location of easements.** Local government plans and regulations that clearly designate farmland preservation areas provide geographical guidelines for acquisition decisions. Especially if such policies indicate where future extensions of urban infrastructure and services will occur and limit extensions elsewhere, they highlight areas for easement programs to avoid in future acquisitions. However, not all geographical designations of preservation and growth areas are useful guides for easement acquisitions. A degree of targeting is called for, one that recognizes variations in agricultural productivity and proximity to the path of urban development.
- 3. Protect easement flanks.** While placing permanent restrictions on particular farms, easements cannot control the uses of adjoining agricultural properties. Indeed, the permanent open space provided by easements is an attractive amenity for homebuyers; certainly it boosts the likelihood that nearby properties will be purchased for residential use. The ever-present danger is that changing land uses on unprotected parcels in the immediate vicinity can over time interfere with agricultural operations on easement-covered farms. Restrictive agricultural zoning on the flanks of protected land minimizes the possibility that residential or other incompatible uses may appear on nearby parcels, as some of our interviewees pointed out. Some agricultural easement programs recognize the importance of strong land use controls around their easement properties by including a local zoning factor in the criteria used to weigh potential acquisitions.
- 4. Buy more time.** Strong planning policies that generate firm growth boundaries and restrictive zoning may decrease the local rate of farmland conversion. More time is thus allowed for agricultural easement programs to acquire the development rights on farms in priority agricultural preservation areas. Easement programs are naturally slow-moving organizations—in part because of the gradual accumulation of acquisition funds and in part because of the time needed to interest landowners and to negotiate easement transactions. Strong planning policies thus reduce the pressure to race the clock and compete with development for critical farm properties.
- 5. Add to easement holdings.** As well as imposing certain land use restrictions, TDRs, cluster zoning and mitigation are techniques that add to the stock of easements managed by a few local programs. Both techniques are incentive-driven, sometimes offering landowners or developers higher building densities in return for concentrating or redirecting residential development. They also require the removal of development rights from select farmland as a condition for approving development, thus acquiring easements without the use of public funds.

Easement Programs Support Planning Policies

The benefits also flow in the other direction, although not as emphatically. Many general plans cite the removal of the development rights on select agricultural parcels as an important land use tool. In these references easements are seen as complementing and strengthening the work of zoning and other regulations. A few plans even identify easements as the most effective technique for farmland protection, perhaps an acknowledgement of the relative weaknesses of regulatory policies. The evidence that easements support or prop up

more conventional land use techniques is less convincing than the flow of support in the other direction—planning helping easements. Still, strong planning policies and regulations support easement programs in at least three ways.

- 1. Soften the burden of regulation.** From a landowner perspective, compensation for selling development rights to some extent offsets the controls of restrictive zoning and other strong land use measures, a number of interviewees suggested. At least the availability of future economic benefits from a local easement program makes some landowners less critical about land use regulations that restrict their development options. Well-funded easement programs in fact have been a selling point for tougher regulations in some communities. Interviewees in New Jersey, Pennsylvania and Washington states noted that specific downzoning proposals were approved only after local agricultural easement programs had become established and credible among local landowners.
- 2. Give continuity to regulations.** Easements also boost planning policies in the same communities by lending them an added measure of durability. Of course the permanent restrictions that are the hallmark of the easement technique are not transferred to regulatory techniques. However, by introducing locally the concept of perpetual preservation of farmland, easement programs in some cases have influenced local governments to take a more long-range view of their land use policies including the changeability of agricultural zoning standards.
- 3. Firm up Growth boundaries.** There are select locations where, according to interviewee comments, easements seem to support and strengthen the urban growth boundaries created by local governments. Contiguous blocks of easements have been formed strategically along the preservation sides of some planning-created boundaries, turning segments into permanent borders.

What Kinds of Connections?

Agricultural easement programs and local government planning efforts in the same communities are naturally drawn together, simply because they have similar conservation goals and function in the same natural environments. There is a difference, however, in focus. Easement programs are single-minded in their concentration on farmland protection. Planning policies contain a more varied set of conservation and growth management goals. Still, it would be difficult to find any local governments with planning responsibilities in agricultural areas that express other than support for the ideal of farmland preservation

The great majority of easement programs in our sample—at least 35 of 46 total programs—have regular contacts with at least some of the local government planning authorities in their service areas, according to program managers and other local informants in the initial interviews conducted in 2002-03. The interactions with planning policy, for most of these programs, are ongoing, formal and substantial.

For six programs, on the other hand, positive connections with local government planning are missing or slight and fleeting, according to interviews. Conflicting or contradictory relationships were not suggested in most of these cases. Rather, the reports referred to the general absence of regular and ongoing communications or information exchanges. No information on program-planning relationships is available for the remaining five programs in the sample.

Ten different types of connections were cited by interviewees and program documents. Listed roughly from the most to the least formal or intense, they are:

1. Easement programs and land use planning programs are managed by the same staff.
2. Elected governing boards are responsible for both easement programs and planning policies and land use regulations.
3. Easement acquisition decisions target geographical areas previously designated as agricultural preservation areas by the local planning process.
4. In acquiring easements, programs are guided in their selection by agricultural zoning or other planning criteria.
5. Agricultural easements are cited as a preferred farmland preservation technique in local government general plans.
6. Municipalities join in the funding of easements acquired by a county- or state-level easement program.
7. Easement program managers and local government planners formally share technical information, including land use and parcel information, resource inventories, and GIS maps and technology.
8. Easement program managers consult with local government planners about the merits of particular acquisitions, in advance of final negotiations with landowners.
9. Easement program managers inform local government planners about new easement acquisitions only after they are approved.
10. Easement program managers and local government planners consult only informally and infrequently.

Improving the Connection and the Quality of Planning Policies

While desirable, formal working relationships with planners do not by themselves generate the benefits for easement programs identified earlier in this chapter. More important in effectively supporting the agricultural easement tool is the quality of local planning policy—a quality that varies considerably among our sample programs.

Agricultural zoning and other regulations that serve mainly to accommodate the equity concerns of landowners, and consequentially are open to substantial residential development and do little to conserve the land base for working farms, undercut the objectives and activities of agricultural easement programs. They offer few if any opportunities for positive or supportive collaborations with agricultural easement programs. In fact it may be unproductive for aggressive easement programs to try to work closely with some local governments where planning policies and practices are not similarly committed to long-term farmland protection.

We know that agricultural easement programs in such situations are often called upon to do the job of local government planning—to control land use through landowner compensation rather than through conventional planning and regulation which are less politically acceptable. This substitution bypasses the advantages of having both approaches working in tandem, diminishing the overall effectiveness of conservation efforts in a community. It also places an unreasonable responsibility on easement programs that, limited in their focus on just the farmland aspect of land use policy, lack the public legitimacy to engage in comprehensive planning.

The issue of organization—whether programs and planning are housed in the same or distant agencies—overlaps a bit with the issue of the quality of local planning. This particularly concerns the states of New Jersey, Pennsylvania, Connecticut, Massachusetts and Vermont where local planning authority is distributed to towns and other municipalities, the most local of all governments, while easement programs are operated at the county or state level. Farmland protection relationships are quite fragmented under these arrangements, with easement programs having to deal with numerous jurisdictions with widely different policies and practices, including agricultural zoning. A county- or state-based easement program may serve many municipalities with minimal or nonexistent farmland protection policies and a few with relatively strong and effective policies—making planning connections varied and complex. Our evidence suggests that the least restrictive farmland preservation policies—or no policies at all—are most likely to prevail in these smallest and most localized governments as compared to the larger and more regional county governments

Building on these considerations, we come to a short list of suggestions for improving the easement-planning relationship in individual communities.

1. The leaders of agricultural easement programs should make the case for stronger and more complementary planning policies, both to the elected leaders in local government responsible for these policies and to the citizens they represent. At issue is the threat to the public's expensive investment in easement purchases, when surrounding incompatible land uses begin interfering with the agricultural productivity of protected farms. For program leaders and managers, this means stepping outside the narrow public box conventionally assigned them and engaging their communities on broad planning issues.
2. Farmland protection efforts should extend beyond the conventional emphasis on agricultural zoning. As we have seen, there is much more to successful farmland protection policies than decreasing zoning densities and adopting stricter use standards. The most effective policies also tap other land use tools—including firm urban growth boundaries, TDRs and development mitigation. Although the other techniques are underutilized in the farmland protection efforts of most jurisdictions, they all have a place in the planning toolbox, especially in support of agricultural easements.
3. It is also desirable to expand the toolbox to improve the livability of urban areas so as to reduce the residential demand for rural lands. Downzonings alone cannot keep new residents out of farm areas, unless they produce much larger minimum parcel sizes in agricultural zones than are politically possible in most communities. Indeed, the sprawl-like spread of large lot rural homes interferes more with agricultural operations, and uses land much less efficiently, than the incremental expansion of

concentrated, high-density subdivisions that house larger numbers of people. In the interest of effective farmland protection, it is imperative to figure out how to use urban areas and their incremental expansion more attractively and efficiently as places for new residential growth. The optimal policy solution thus is to combine the reactive strategy of protecting individual agricultural parcels with the proactive one of reducing the demand for country living by creating more varied and appealing residential opportunities in already urbanized areas.

4. Obviously, more is better when it comes to the accumulation of easements on agricultural properties. Even more important than volume, however, is the optimal location of easements—their placement in contiguous blocks rather than in scattered locations. Putting them together in large concentrations as a deliberate strategy helps to insulate individual easement-covered farms from the conflicting land uses that may appear on nearby, unprotected farmland. This is not a new idea; many easement programs already give priority in their purchase decisions to building blocks of protected farms, as our Report 2 on acquisition standards notes. But we suggest that this criterion merits more emphasis by programs, in comparison with the top weight usually given to agricultural soils and individual parcel factors.
5. What to do about the fragmentation of local planning responsibilities among numerous municipalities in certain states? Fundamental overhauls are not in the cards, since these long-standing arrangements are rooted in state law and traditions of local control. Yet incremental shifts to a more regional approach are possible. New Jersey and Pennsylvania counties already prepare comprehensive plans that include farmland protection priorities, although basic land use regulatory authority is exercised by municipalities. In these and other states with active county governments, it may be possible to add limited regulatory abilities to the county portfolio, such as the power to review and revise specific kinds of municipally-approved projects that will adversely affect local agriculture. Vermont has had a similar process for more than 30 years, in which regional commissions approve or deny certain development projects according to environmental impacts including farmland loss. Another model is suggested by New Jersey's designations of its multi-county Pinelands and Highlands regions for special restrictions on growth to preserve water resources, with farmland protection a secondary benefit.
6. A more modest answer to the problem of planning fragmentation is to increase technical and information collaborations between easement programs and municipalities. Some programs and county planning agencies regularly advise and share their greater expertise and information with the smaller town governments. As their experiences suggest, obtaining change in local planning policies through such intergovernmental collaboration is a slow process that requires the steady investment of staff time and other resources.
7. Finally, we suggest that state governments could demand more from their local planning authorities in the way of stronger farmland protection policies and practices. As the source of local government authority, state governments have two major tools for this purpose—mandates and money or other incentives. The two go hand in hand, of course, since incentives can help to bring about desired actions. Among the local improvements that states can promote are clearer definitions of agricultural land uses, limits on allowing residential and other exceptions to agricultural zoning standards, and requiring consistency between zoning and comprehensive plans.

State governments also have technical and informational assets to contribute to local policies, including mapping, resource inventories and assessments of local farmland protection efforts. Data-based assessments that compare the effectiveness of policies in different communities, such as recently published critiques in several states (Evans, 2004; Maryland Department of Planning, 2004), aid the farmland policy process technically and provide ammunition to state and local advocates for stronger measures.

REFERENCES

- American Farmland Trust. 1997. *Saving American Farmland: What Works*. Washington, D.C.
- Bowers, Deborah. 2001. "Achieving Sensible Agricultural Zoning to Protect PDR Investment." 11-16 in Lawrence W. Libby and Charles Abdalla, eds., *Protecting Farmland at the Fringe: Do Regulations Work?* Columbus: The Ohio State University.
- California Department of Conservation. 1986-2002. *California Farmland Conservation Report* (biennial reports). Sacramento: Farmland Mapping and Monitoring Program.
- Conservation Partners, Inc. 1995. *Routt County Open Lands Plan*. Colorado: Steamboat Springs.
- Coughlin, Robert E. 1991. "Formulating and Evaluating Agricultural Easement Programs." *APA Journal*, Spring, 57:2. 183-192.
- Cordes, Mark W. "Agricultural Zoning: Impacts and Future Directions." 17-33 in Lawrence W. Libby and Charles Abdalla, eds., *Protecting Farmland at the Fringe: Do Regulations Work?* Columbus: The Ohio State University.
- Daniels, Thomas L. 1993. "Agricultural Zoning: Managing Growth, Protecting Farms." *Zoning News.*, August. American Planning Association.
- _____. 1997. "Where Does Cluster Zoning Fit in Farmland Protection?" *APA Journal*, Winter, 63:1, 129-137.
- _____ and Deborah Bowers, 1997. *Holding Our Ground: Protecting America's Farms and Farmland*. Washington, D.C.:Island Press.
- Evans, Tim. 2004. *Race to the Middle: The Homogenization of Population Density and What It's Costing New Jersey*. Trenton: New Jersey Future.
- Farmland Preservation Report*. January 2005. "New Jersey: Downzonings slash equity, study claims." 1-3.
- _____. April 2005. "Bill Powel: Former dairyman keeps county in national limelight." 6-7.
- Heimlich, Ralph and William D. Anderson. 2001. *Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land*. Report No. 803. Washington: Economic Research Service, U. S. Department of Agriculture.
- Lynch, Lori. 2005. "Protecting farmland: Why do we do it? How do we do it? Can we do it better?" 279-300 in Stephen J. Goetz, James S. Shortle and John C. Bergstrom, eds., *Land Use Problems and Conflicts: Causes, Consequences and Solutions*. New York: Routledge.

- McConnell, Virginia, Elizabeth Kopits, Margaret Wells. 2003. "How Well Can Markets for Development Rights Work? Evaluating a Farmland Preservation Programs."
- Maryland Center for Agro-Ecology, Inc. 2003. *Downzoning: Does it Protect Working Landscapes and Maintain Equity for Landowners?* Annapolis.
- Maryland Department of Planning. 2004. *Maximizing Return on Public Investment in Maryland's Rural Land Preservation Programs.* Annapolis.
- Preutz, Rick. 2003. *Beyond Takings and Givings: Saving Natural Areas, Farmland, and Historic Landmarks with Transfer of Development Rights and Density Transfer Charges.* Marina Del Rey, Ca.: Arje Press.
- Schiffman, Irving. 1999. *Alternative Techniques for Managing Growth.* Berkeley, Ca.: Institute of Governmental Studies Press, University of California, Berkeley.
- Smith, Michael D. and Lisa M. Spadoni. 2004. "Protecting Open Space and Community Quality of Life: How Effective are Land-Use Policies?" Paper presented to the 67th annual meeting of the Rural Sociological Society, Sacramento, Ca., August 12-16.
- Sokolow, Alvin D. 2001. "Measuring Farmland Conversion in California: A Comparison of Two Data Sources—NRI and FMMP." University of California, Davis.
- _____. 2004. "California's Edge Problem: Urban Impacts on Agriculture." 289-304 in J. B. Siebert, ed., *California Agriculture: Dimensions and Issues.* Berkeley, CA.: Giannini Foundation of Agricultural Economics.
- _____. 2005. "The smart growth approach to urban land use: Implications for farmland protection." 266-278 in Stephen J. Goetz, James S. Shortle and John C. Bergstrom, eds., *Land Use Problems and Conflicts: Causes, Consequences and Solutions.* New York: Routledge.
- Vermont Department of Agriculture, Food and Markets; Vermont Housing and Conservation Board. 2003. *Act 250 Off-Site Mitigation.* Montpelier.
- Whoriskey, Peter. 2003. "Density Limits Only Add to Sprawl." *Washington Post*, March 9. A01.
- Working Lands Alliance. 2005. *A Call to Farms: A Mid-Decade Look at Connecticut's Agricultural Lands.*

APPENDIX TABLES

**TABLE A1
EASEMENT AND LOCAL PLANNING PROGRAMS HOUSED IN SAME GOVERNMENTS**

Easement Program	Location of Easement Program¹	Location of Planning Program¹
CA – Sonoma Agric & Op Space District	Special District under control of county elected board	County Dept of Planning
CO – Boulder County	County Parks & Open Space Dept.	County Dept of Planning
MD – Anne Arundel Co	County Office of Recreation & Parks	County Dept of Planning
MD – Baltimore County	County Dept of Environmental Protection and Resource Mgt.	Same
MD – Calvert County	County Dept of Planning & Zoning	Same
MD – Caroline County	County Dept. of Planning & Codes Administration	Same
MD – Carroll County	County Dept. of Planning	Same
MD – Frederick County	County Dept. of Planning	Same
MD – Harford County	County Office of Ag & Resource Protection, within Dept. of Planning	Same
MD – Howard County	County Dept of Planning & Zoning	Same
MD – Montgomery County	County Ag Services Division, Dept. of Economic Development	County Dept of Planning
MD – Washington County	County Dept of Planning	Same
MI – Peninsula Township	Township Dept of Planning	Same
NY – Southold Township	Township Land Preservation Dept.	Same
PA – Buckingham Township	Independent staff	Same
VA – Virginia Beach City	City Dept of Agriculture Dept.	City Dept of Planning
WA – King County	County Dept of Natural Resources & Parks	County Dept of Planning
WA – San Juan County	Staff reports to county board	County Dept of Planning
WA – Skagit County	Staff reports to county board	County Dept of Planning
WI – Dunn Township	Township Dept of Planning	Same

¹ Generally, where program staff are located.

TABLE A2
EASEMENT AND LOCAL PLANNING PROGRAMS HOUSED IN DIFFERENT ORGANIZATIONS

Jurisdiction	Easement Organization	Planning Organization	Types of Connections ¹				Degree of Connection ²
			1	2	3	4	
CA – Marin County	land trust	county			x	x	High
CA – Monterey County	land trust	county			x		Moderate
CA – Napa County	land trust	county					Minimal
CA – Alameda County (part)	land trust	county, cities			x		High
CA – Yolo County	land trust	county				x	Moderate
CO – Gunnison County	land trust	county	x				Moderate
CO – Routt County	land trust	county	x				Moderate
Connecticut	state	towns					Minimal-Mod
Delaware	state	counties	x		x	x	Minimal-Mod
Massachusetts	state	towns	x		x		Minimal
NJ – Burlington County	county	towns	x	x	x	x	High
NJ – Cumberland County	county	towns		x	x	x	Minimal-Mod
NJ – Hunterdon County	county	towns	x	x		x	Moderate-High
NJ – Monmouth County	county	towns	x	x		x	Minimal-Mod
NJ – Morris County	county	towns	x	x	x	x	Moderate-High
NJ – Sussex County	county	towns	x	x			Minimal-Mod
NY – Suffolk County	county	towns	x			x	Moderate
NC – Forsyth County	soil/water district	county					Minimal
PA – Adams County	county	towns		x		x	Minimal-Mod
PA – Berks County	county	towns	x	³		x	Minimal-Mod
PA – Bucks County	county	towns	x	³			Moderate
PA – Chester County	county	towns	x	³		x	Moderate-High
PA – Lancaster County	county	towns		³		x	Moderate-High
PA – Lehigh County	county	towns		³		x	Minimal-Mod
PA – York County	county	towns	x	x		x	Moderate-High
Vermont	state/land trusts	towns		x	x		Minimal-Mod

¹Types of Connections: 1 – easement and planning programs jointly fund some easements; 2– acquisition criteria of easement program include local planning/zoning effort; 3– planning program reviews/approves specific acquisition proposals of easement program; 4 – consultation on planning policies and practices between easement and planning programs.

² Based on overall subjective assessments.

³ Acquisition criteria refer to countywide planning, but not to town policies where zoning and growth management are located.

TABLE A3
STATE RULES AFFECTING LOCAL FARMLAND PROTECTION POLICY AND REGULATIONS

State	Constitutional or Statutory Provisions
California	<p>The state gives general purpose local governments multiple tools and requirements that work in combination to strengthen agricultural zoning and other growth control practices. Each county and city has to adopt a general plan with mandated elements (including those for land use and open space); some counties adopt optional agricultural elements. Other state requirements: (1) zoning ordinances and changes have to be compatible with general plan policies; (2) zoning changes are limited to three a year; (3) boundary control commissions have to consider impacts on farmland conversion when considering city annexation proposals; and (4) urban development proposals—including those that would convert farmland—must undergo an elaborate environmental review.</p> <p>Furthermore, under the state’s broad initiative powers, citizen groups in individual communities frequently take growth control measures to the ballot box.</p>
Colorado	<p>Subdivision of parcels of 35 acres and larger is exempted from local government review, allowing such projects to go forward without public review (outside of building code requirements). This results in the creation of many large residential lots on rural lands throughout the state. To work around the state’s restriction and impose some local control, some counties—including Boulder and Routt in our research sample—offer developers additional residential lots beyond the 1:35 ratio in return for smaller parcels, clustered to preserve agricultural land and other open space. Also in Colorado, counties and cities are required to adopt master plans and zoning plans.</p>
Connecticut	<p>Municipalities (towns) are required to adopt 10-year plans of conservation or development.</p>
Delaware	<p>The state constitution prohibits counties and municipalities from applying zoning ordinances and other land use regulations to agricultural land. These powers are reserved to the state legislature.</p>
Maryland	<p>The state mandates counties and municipalities to adopt land use plans.</p>
Massachusetts	<p>Municipalities with planning boards are mandated to create master plans with land use, open space and other elements</p>
Michigan	<p>State law excludes parcels of more than 10 acres from subdivision review</p>
New Jersey	<p>Municipalities are both restricted and empowered in the farmland protection areas. On the one hand, they are prohibited from adopting exclusive agricultural zoning, although farmland as a permitted use (not requiring variance approval) in most zone classifications. On the other hand, the “cross-acceptance process,” in which municipalities and counties are supposed to coordinate their development policies with the State Development and Redevelopment Plan, promotes the retention of large blocks of agricultural land as one of several objectives. Special rules apply to Pinelands area, covering a million acres in the southeastern quarter of New Jersey and the location of one of the world’s largest aquifers. Here, state law gives a high degree of protection to farmland and other resource lands, overriding local regulations.</p>

State	Constitutional or Statutory Provisions
North Carolina	State law expressly excludes agricultural operations from the application of zoning and subdivision controls.
Pennsylvania	Agricultural zoning ordinances are required to contain clustering and sliding scale provisions (minimum parcel size increases for larger farms). State law also mandates a wide range of allowable uses for particular zoning classifications.
Vermont	District environmental commissions, acting for state government, approve or deny pre-construction permits for development proposals that will impact agricultural soils and other types of resources.
Washington	Counties experiencing rapid growth must work with their municipalities to develop comprehensive growth management plans that provide for the protection of farmland and environmentally sensitive areas. Urban growth areas are also mandated, with an emphasis on directing development to cities and other locations with existing infrastructure. As a state with a “smart growth” agenda, Washington encourages local governments to adopt such “innovative” land use management techniques as density bonuses, cluster housing, and TDRs (transfers of development rights). Washington also requires environmental impact review of proposed development projects.
Wisconsin	Local agricultural zoning with 35-acre minimums is a condition for property tax reductions on farmland.

TABLE A4
LOCAL GENERAL AND OPEN SPACE PLANS THAT CITE AGRICULTURAL EASEMENTS

Jurisdiction	Plan Document/Date	Agricultural Easement Provisions
CA – Marin County	General Plan/1994	One of the plan policies for protecting agricultural land is the use of easements. The role of the nonprofit Marin Agricultural Land Trust is recognized in this regard. – <i>Agriculture Element</i>
CA – Tri Valley Conservancy	South Livermore Valley Area Plan/ 1993. Adopted by Alameda County and Livermore and Pleasanton cities	Calls for an agricultural easement program to be managed by a land trust and financed in large part by mitigation fees on residential development in the two cities. Led to the formation of the South Livermore Valley Agricultural Land Trust; name changed later to Tri Valley Conservancy.
CA – Sonoma County	General Plan/ 1989	Calls for the use of voluntary agricultural easements to protect farmland, particularly in eight community separator areas. – <i>Agricultural Resources and Open Space elements.</i>
CO – Boulder County	Comprehensive Plan//1997	Recognizes both the purchase of development rights (PDRs) and fee simple purchase as appropriate for protecting farmland, but gives preference to the former. Also cites regulatory authority to mitigate effects of new development on agriculture. – <i>Agriculture Goals, Policies, & Maps Element</i>
CO – Routt County	Open Space Plan/1995	Identifies conservation easements, PDRs, and TDRs among eight techniques for protecting agricultural and resource lands.
MD – Baltimore County	Master Plan 2010/1999	Major emphasis given permanent easements as the “only way in which continued agricultural use can be guaranteed...regardless of zoning.” Details of accomplishments of agricultural easement program. Suggested actions include “creative financing” to increase rate of acquisitions, cooperation with local land trusts, and investigate use of TDRs. – <i>Part 5: The Rural County</i>
MD – Calvert County	Comprehensive Plan, 2004	Celebrates the achievements of land preservation programs by allocating funds to agricultural easement programs. Goals include continued support of local and national land trusts, preservation of a minimum of 40,000 acres of prime farm and forestland, and continued support of County preservation programs. – <i>Chapter 1, Land, Land Use and Growth Management, p. 3</i>
MD – Carroll County	Master Plan, 2000	County views conservation easement programs as critical in achieving the goal of preserving 100,000 acres of tillable land. Includes a map of agricultural easements. Discusses ways to increase participation in easement programs in the future. – <i>Chapter 6, Agriculture</i>
MD – Frederick County	Comprehensive Plan, 1998	Preservation goal of 100,000 acres of farmland through easement protection by 2020. Additionally, notes that easement purchase should be refined or established to protect the agricultural industry and agricultural resource base. – <i>Chapter 4, Land Use</i>
MD – Harford County	Master Plan, 2004	County emphasizes the continued use of existing TDR programs, and the development of new preservation programs. Easements are cited as a key component in farmland preservation. – <i>Growth Management and Resource Conservation, p. 99</i>

Jurisdiction	Plan Document/Date	Agricultural Easement Provisions
MD – Howard County	General Plan, 2000	“The County has been successful in competing for funding for easement purchases through the State’s new Rural Legacy Program and will continue to pursue grant funding in the future.” – <i>Chapter 6, Working With Nature: Green Space and Greenways, p. 231</i>
MD – Montgomery County	General Plan, 1964 (updated most recently in 1993)	County intends to continue the TDR Program, as well as the state and county easement programs as an important component of farmland preservation. – <i>Chapter 2, Land Use</i>
MD – Washington County	Comprehensive Plan, 2002	“Purchase of development easements to support preservation efforts in the County’s designated Rural Legacy Area, federal lands, state parks, state wildlife management areas, county parks, and Edgemont Watershed is encouraged.” – <i>Chapter 12, Land Use, p. 248</i>
MI – Peninsula Township	Master Plan, 2004	“The PDR program provides an innovative way to preserve agricultural land, which is a primary component of the Township’s economy. The Township continues to look for ways to preserve the rural character of the Peninsula by enhancing the PDR program with other planning tools, such as clustering and transfer of development rights.” – <i>Chapter 3, Land Use Policies, p. 13</i>
PA – Adams County	Comprehensive Plan, 1990	Notes that there are two organizations dedicated to preserving farmland in the County, The Adams County Agricultural Land Preservation Office and the Land Conservancy of Adams County. – <i>Land Use –Growth and Development Report, p. 12</i>
PA – Berks County	Comprehensive Plan, 2000-2020	Plan cites conservation easements as one tool among others for farmland preservation in the County. – <i>Chapter 3, Future Land Use Plan</i>
PA – Chester County	Linking Landscapes: A Plan for the Protected Open Space, 2002	“Municipalities and farmers will continue to support and increase their participation in Agricultural Security Areas and the Agricultural Easement Purchase program. The County will continue to assist with and provide funding for these programs.” – <i>Rural Landscapes</i>
PA – Lancaster County	Comprehensive Plan, 1999	County commits to purchase or accept conservation easement donations on farmland outside of designated growth areas. – <i>Policy Element, Key Focus Area One</i>
PA – Lehigh County	Lehigh Valley Comprehensive Plan, 2005-2030	Easement programs are key components of farmland preservation. Map shows easement properties and agricultural security areas. – <i>Farmland Preservation</i>
PA – York County	Comprehensive Plan, 1997	Notes that several municipalities have TDR programs and encourages the expansion of this technique. Several easement programs in the region are cited as an important component of farmland preservation, although there are limited funds to support such programs. – <i>Growth Management: Agricultural Lands</i>
VA – Virginia Beach City	Comprehensive Plan Policy Document/2003	The agricultural easement program preserves farmland and rural character and reduces the need for urban infrastructure. It is “...an important long-range implementation tool...” for the city’s growth management. – <i>Chapter 6, Rural Area</i>
WA – King County	Comprehensive Plan, 2004	The County encourages “innovative techniques for land use management” such as TDRs and easements. – <i>Chapter 3, Rural Legacy and Natural Resource Lands, p. 3-12</i>

Jurisdiction	Plan Document/Date	Agricultural Easement Provisions
WA – San Juan County	Comprehensive Plan, 2002	Encourages the use of conservation easements for the preservation of agricultural and other resource lands, and cites the San Juan County Preservation Trust or Land Bank. – <i>Section B, Element 2, Land Use</i>
WA – Skagit County	Comprehensive Plan, 2003	Easements are discussed for open space preservation and wildlife habitat protections. Agriculture is mentioned but not emphasized. – <i>Chapter 4, Land Use Element</i>

Sources: interviews and local government websites.

