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Farmland Preservation Techniques: Identifying New Options*

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Farmland Preservation Techniques: Identifying New Options.

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Abstract

This report describes over 20 novel techniques for preserving agricultural land. Using a survey of various literatures, phone interviews with program managers, and original policy design, these techniques are explained and categorized. A conceptual framework is offered that distinguishes the various roles governments can assume in order to affect outcomes in agricultural land markets. These roles are regulatory, incentive-based, and governmental participatory. Also, a fourth category of hybrid techniques are presented. For each novel technique, likely fiscal impacts are assessed and the acceptability of each technique to various stakeholders is discussed. In general, the findings demonstrate that novel regulatory techniques tend to be the least expensive to governments, but also are the least acceptable to agricultural landowners. Incentive-based and governmental participatory techniques are often more expensive, and thus may have limited acceptability to taxpayers. The conceptual framework also suggests that when governments select multiple techniques, attention should be paid to the implied allocation of property rights so as to maintain a coherent land-use policy. Conclusions from a comparative financial analysis suggest that some techniques seem to be superior to others under almost all conditions. This should help policy makers design programs that even more effectively allocate preservation dollars.

Keywords: Purchase of agricultural conservation easements, rights of first refusal, eminent domain, tontine

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Table of Contents

Abstract.....iii

Introduction.....1

The Goals of Farmland Preservation.....1

Leading Preservation Techniques1

Summary of Preservation Techniques3

The Organization of this Report.....3

Novel Regulatory Techniques4

Growth Boundaries.....4

State Executive Orders4

Growth Management.....5

Agricultural Protection Zoning5

Cluster Zoning.....5

Right-to-farm Ordinances.....5

**Incentives—Techniques that Alter the Relative Return of
Converting Farmland6**

**Purchase of Development Rights (PDR)
and/or Purchase of Agricultural
Conservation Easement (PACE)6**

**Novel Impact fees, Exactions, and
Mitigation Ordinances.....7**

Mortgage Assistance7

**Programs that Enhance Economic
Viability of Agriculture8**

**How profitable does agriculture have to
be?.....9**

“Lease” Conservation Easements.....11

Tontine13

Circuit Breaker Tax.....13

Capital Gains Reduction Treatment14

Installment Payments15

Bargain Sales/Charitable Deductions16

Charitable Deductions17

Recapture Taxes.....20

Transfer Tax	20
Revolving Funds	21
State Income Tax Forgiveness	21
Novel Participatory Techniques	23
Land Banks	23
Eminent Domain	23
Right of First Refusal	23
Novel Hybrid Techniques	24
Eminent Domain/ROFR	24
Using Land Value as a Pension Plan/PDR	24
Point Systems	25
Transfer of Development Rights	26
Marketable Development Rights	26
Agricultural Districts	27
Implementation	28
Implementation	28
The Goals of Farmland Preservation	28
Comparative Evaluation and Summary	29
Summary Comparative Financial Impact Analysis	33
Works Cited	36

List of Tables

1	Price Based on Agricultural Use-Values for a Range of Net Returns.....	10
2	Profit or Net Returns Needed to Retain Land in Agriculture for 30+ Years when Value is Appreciating...	10
3	Profit or Net Returns Needed to Retain Land in Agriculture for 30+ Years if Value Appreciates Slowly...	12
4	Easement and Land Values of Actual Participants in Maryland Agricultural Land Preservation Foundation.....	13
5	Calculating the Basis for Selling Development Rights.....	15
6	Comparing Lump-sum versus Installment Payments for Ms. Carter.....	16
7	Easement Sale with Charitable Donation.....	19
8	Retirement Annuity.....	25
9	Comparative Evaluation.....	31

Farmland Preservation Techniques

Identifying New Options

Joshua M. Duke and Lori Lynch

Introduction

This report identifies and evaluates novel techniques for farmland preservation. The results of this investigation should be useful to policy makers when selecting new programs to complement or replace existing programs.

Many novel techniques have been put forth to achieve farmland preservation goals, and yet practical challenges prevent policy makers from testing all ideas. Other novel techniques have been used, but on a limited scale. We aim to bring together these novel techniques in a single document so that policy makers can conveniently review all their options prior to selecting a new preservation technique.¹

The Goals of Farmland Preservation

To be effective, a farmland preservation technique must ensure that farmland owners want to participate in the program; ensure participants' parcels have the characteristics that will achieve society's goals; and be acceptable to program administrators, elected officials, and the general public. The ability of any one preservation technique to satisfy these criteria simultaneously has proven difficult. Landowners and landscapes are simply too heterogeneous and the set of societal goals are

¹ American Farmland Trust published a book entitled "Saving American Farmland" which examines a variety of farmland preservation techniques that are currently in use. Another excellent source on novel techniques is a research report by Peter Z. Acuff available at <http://www.geocities.com/zebacuff/farmpres.html>.

too broad. As such, state and local governments and local nonprofit groups have attempted to preserve farmland by using different sets of techniques. These entities weigh how each technique's relative performance varies in terms of participation, societal goals, and acceptance.

Leading Preservation Techniques

A preservation technique may be said to be novel if it is new or not commonly used, and if it improves land preservation outcomes by complementing or substituting for existing policies. As an introduction, leading and novel preservation techniques are categorized to set the stage for evaluation of novel techniques.

We classify these techniques in four different forms—regulatory, incentive-based, participatory, and hybrid—depending on the way in which they affect the agricultural land market.

Regulatory techniques define the agricultural land market:

1. Agricultural protection zoning (APZ)
2. Agricultural use zoning (AUZ)
3. Right-to-Farm laws (RTF)
4. Growth Boundaries
5. State Executive Orders
6. Growth Management laws
7. Cluster zoning
8. Right-to Farm Ordinances

These zoning techniques dictate the maximum intensities of both agricultural and nonagricultural land uses. Zoning establishes

institutions, which most landowners accept as delineating property rights. Because most landowners view these rights as credible and persistent, down-zonings and up-zonings attempts are usually extremely contentious. Thus, zoning techniques tend to coordinate the expectations of agricultural and nonagricultural landowners, but are too rigid to address rapidly evolving conditions in the land-use markets.

Incentive-based techniques make it more costly for landowners to decide on land uses that are not desired by society. These techniques may provide other options or make it less costly for land-use behaviors that satisfy social goals. Incentive-based techniques differ from regulatory techniques in that they do not alter the institutional structure of markets; they simply alter relative prices within markets.

These incentive-based policies are both familiar and novel:

1. Use-value (differential) assessment
2. Impact fees and exactions; new use of impact fees
3. Mitigation ordinances
4. PACE and purchase of development rights (PACE/PDR).
5. Mortgage assistance
6. Conservation easement leases
7. Tontine
8. Capital gains reduction
9. Bargain sales/charitable deductions
10. Recapture and transfer taxes

When coupled with zoning, incentive-based techniques have provided effective preservation. Landowners benefit from the ability to make voluntary land-use decisions—though at different prices—and this partially offsets for the inflexibility of zoning.

Nevertheless, incentive-based techniques generate controversy, which arises in part from a fundamental incoherence in the allocation of property rights. Specifically, impact fees imply that an agricultural landowner must compensate the public for conversion to a nonagricultural

Farmland Preservation Techniques
Food and Resource Economics, University of Delaware

land use. PACE/PDR, in contrast, requires the public to compensate the landowner to preclude a nonagricultural land use. The right of conversion is owned by the public in the former and the landowner in the latter. Such problems with the allocation of rights may limit the future acceptance of these incentive-based programs.

Governmental Participatory preservation techniques occur when the state acts as a demander or supplier in the land market. There are three general types of techniques:

1. Limits on eminent domain for purposes other than preservation
2. Fee-simple sale
3. Fee-simple purchase
4. Right of first refusal
5. Land banks

In the past, eminent domain may have been the most high-profile participatory technique. It has long been known that agricultural landowners have been disproportionately affected by the governmental exercise of the power of eminent domain. Road building and similar activities generate a host of costs and benefits for agricultural landowners. However, these decisions were often made with little consideration for their effect on the agricultural economy. Thus, some states have statutes similar to Delaware's:

“State agency action, particularly action involving the exercise of powers of eminent domain, which has an adverse impact on viable agricultural lands, should be avoided or minimized.”²

Historically, fee-simple sales of land have also had a great effect on the agricultural economy. Federal leasing of ranch land and sales of timber harvesting rights may be seen as the descendant of the past policies of promoting agriculture by selling land at low or no cost.

² 3 Del. C. § 901 (2002).

Fee-simple purchase through negotiated sale or eminent domain is becoming an increasingly popular method to preserve natural areas. Purchasing the land provide a more complete set of rights than easements, including public access. Purchase, however, also creates the responsibility to manage or lease these parcels.

Hybrid techniques combine the characteristics of two of the preceding types of techniques. Two commonly used techniques (1 and 2) are, in fact, hybrids:

1. Transfer of development rights (TDR)
2. Agricultural districts
3. Land value as pension plan
4. Easement valuation through point system

TDR programs combine regulatory and incentive-based techniques. The regulatory aspect of TDR defines sending zones, receiving zones, and the characteristics of this new market. For instance, the eventual price of development rights will depend on the quality and quantity of the rights. Program administrators establish these market “ground rules” under conditions of uncertainty, though they have some, limited abilities to characterize supply and demand for these rights. The nature of the landowners’ decision problems also depend on the scope of incentives offered. A voluntary sending zone, for example, produces a more complex set of incentives for landowners than a mandatory sending zone.

Agricultural districts also exhibit hybrid characteristics. Agricultural districts are voluntary, incentive-based techniques in that petitioning landowners and their neighbors “opt in” and thus multilaterally restrict their conversion options. Yet, this technique has a regulatory basis. By participating, landowners are validating and perpetuating the existing land-use pattern resulting from zoning. Some neighbors may oppose the creation of agricultural districts, but quasi-judicial bodies may still approve the formation of such districts after notice and hearing from affected parties.

Summary of Preservation Techniques

The familiar regulatory, incentive-based, participatory, and hybrid techniques remain the leading way to preserve farmland. That will not change. Nevertheless, there is a general concern emerging about how to require or to encourage new preservation. The cost and acceptance of these techniques is also at issue. Even voluntary programs now face challenges. Voluntary incentive-based programs impose substantial fiscal constraints on local and state governments. Moreover, the pool of landowners willing to participate in existing programs may decrease or may result in participation from landowners with less-than-optimal farm characteristics. Some of these leading techniques—most notably, regulatory and impact fees—also have raised constitutional issues in judicial review, which has somewhat limited the ability of planners to use these techniques for preservation.

Therefore, there is a recognized need to complement existing programs with other techniques for farmland preservation.

The Organization of this Report

This report identifies novel techniques and evaluates their ability to achieve the goals of preservation. In the second, third, fourth, and fifth sections, a description of novel techniques is offered in the same four-part structure as developed in this section. These techniques were identified through a review of secondary sources, contacts with program managers, and the construction of new preservation strategies by the authors. The sixth section turns to a comparative evaluation. The ability of the proposed techniques to generate participation, achieve social goals, and gain acceptance is assessed. The complementarity and substitutability of the novel techniques are also considered. The final part of the sixth section

concludes with a comparative financial impact analysis.

Novel Regulatory Techniques

Regulation has been the principal method for governments to control land uses. Regulatory techniques are used by the government to define the market institutions. Because of this, it defines potential land values. Only a few novel techniques were identified as having a regulatory basis. This section describes growth boundaries, which actually have been known for some time and yet has not been widely adopted. State executive orders and policies to increase the profitability of agriculture are presented. Other regulatory techniques include growth management laws which can link development to agricultural preservation, agricultural protection zoning, cluster zoning and right-to-farm law (among others).

Growth Boundaries

Growth boundaries operate as a perimeter around metropolitan areas, beyond which the more intensive development patterns cannot occur. What may distinguish growth boundaries from traditional regulatory efforts is that the boundaries are “sharp”. Second, owners should hold little expectation for intensification—variances, up-zoning, nonconforming use, etc.—beyond the boundary. The ostensible persistence of these boundaries ought to fix the institutional environment and thus make symmetric all owner expectations. This allows for optimal investment incentives for a diversity of land uses. The credibility of persistence arises from the comprehensive planning, or growth management plans, involved in generating boundaries. In contrast to piecemeal land-use control, growth boundaries involve the coordinated effort of many governments. Once implemented, growth boundaries strictly limit the ability of localities to deviate from comprehensive planning.

There is no direct fiscal effect of implementing growth boundaries on states and municipalities other than the initial administrative costs of establishing the zones and the on-going costs of hearing appeals. The indirect costs may be important, however. For instance, by predetermining the intensity of development patterns, growth boundaries cap the relative tax bases for local governments. Some localities will be able to in-fill with high-value commercial, industrial, and residential land-uses, while other localities will be restricted to protected, but economically limited, agricultural and other less intensive land uses. One might worry that this will create inequalities in school funding and public services among some neighboring localities.

Growth boundaries may also have controversial effects on some residents within growth boundaries. Agricultural landowners inside the boundary will likely find farming becomes increasingly difficult due to trespassing, nuisance complaints and traffic on the road as more intensive nonagricultural uses increase in accordance with comprehensive plan. The increasing value of their land in development may help offset the likely transition in land use.

Oregon has been lauded for its efforts using this technique. Each county has implemented agricultural protective zoning in concert with their urban growth boundaries.

State Executive Orders

Executive orders give governors the power to allocate funds or create policies, programs, or agencies to protect farmland. Executive orders can act to “check and balance” other state actions to prevent state actions from inadvertently resulting in the conversion of farmland. Executive orders can also be used to ensure the coherence of state preservation policy by promoting consistent policy on agriculture and farmland protection (American Farmland Trust, 1997). It would not make sense to have all this protection policy and then have tax

money going to projects that convert farmland to non-agricultural uses.

Recently, in Maryland, the state was creating a university campus in the Hagerstown area. They initially chose a spot on pristine farmland outside the city. Because of the smart growth and farmland retention policies, it was determined that this choice conflicted with state goals, and a downtown revitalization site was chosen instead.

Growth Management

State and local governments have instituted growth management laws to slow the rate and location of development. These could include establishing growth areas where growth is desired and establish no- or slow- growth areas. Many local governments have established adequate public facilities ordinances (APFO) when public infrastructure such as road, sewer or schools is not sufficient to accommodate the increased growth.

Six states have implemented growth management statutes that address farmland conversion. These states have used a combination of regulatory based and incentive based techniques to achieve their goals of controlling the rate of growth and the conversion of farmland. Oregon had each county implement agricultural protection zoning and had each city establish urban growth boundaries. Washington imposed regulation to protect farms from incompatible adjacent land uses. Counties designated growth areas and restricted public services to these areas alone. Some counties used agricultural protective zoning while other implemented purchase of agricultural conservation easements programs. Vermont has used fees in lieu when prime agricultural soils are lost. New Jersey and Maryland direct government money for infrastructure to growth areas.

Agricultural Protection Zoning

Local governments often use zoning to establish appropriate land use in specific areas. Zoning can also set the permitted density of development. Governments can use the agricultural protection zoning technique to insulate and protect the agricultural sector. Farming would be set as the only land use and other activities would be limited. This type of zoning can also restrict the number of houses permitted on the farm.

Implementing APZ usually requires both a restriction on the permitted activities and a decrease in the permitted density. The down-zoning may have the effect of decreasing the value of the farmland. Thus counties have tried to find methods of compensating the landowners.

Cluster Zoning

Instead of APZ, some counties have attempted a new type of zoning, which requires that new homes be placed near one another and that the remainder of the land be preserved as a farm or open space through an easement provision. This eliminates the problems of having one house on each 20 acres making the rest difficult to farm. It usually reduces both the cost and the impact of the housing development as well.

The remaining land may be rented to neighboring farmers or used by the new homeowners for trails or open space pursuits.

Right-to-farm Ordinances

These ordinances ensure that farmers who are using acceptable, normal farming practices are insulated from nuisance complaints. The protection of right-to-farm laws may come with agricultural districts, and so often include both regulatory and incentive-based properties. Several of the ordinances restrict local governments from prohibiting reasonable farm

practices or imposing costly restrictions on the farmers.

Hamilton (1992) identifies six types of right-to-farm laws:

- 1 Traditional right-to-farm laws;
- 2 Laws requiring the use of generally accepted agricultural management practices (GAAMPs);
- 3 Laws listing specific protected agricultural activities;
- 4 Laws protecting animal feedlots;
- 5 Laws requiring creation of agricultural districts; and
- 6 Local right-to-farm ordinances.

Areas with an effective right-to-farm law can see fewer lawsuits imposed on the agricultural community. Moreover, properly constructed and publicly accepted right-to-farm laws create symmetric expectations about land use for both farmers and nonagricultural neighbors. This allows for efficient resource use. Yet, irritated non-farming neighbors may still find alternative charges to use in a lawsuit.

The constitutionality of right-to-farm laws has been a issue of debate since the Iowa Supreme Court's decision in *Bormann, et al v. Board of Supervisors in and for Kossuth County, Iowa*, 584 N.W.2d 309 (Iowa 1998), *certiorari* denied, 199 S.Ct. 1096 (1999). The Court found that the law constituted a regulatory taking of the neighbors' property without compensation, and thus was facially unconstitutional. Court cases in other states do not suggest that all right-to-farm laws are at risk, however.

Following the *Bormann* ruling, some states and localities have modified their right-to-farm laws to be protected from constitutional vulnerabilities. Nevertheless, farmers may not fully appreciate that right-to-farm laws do not provide full protection for all agricultural activities. Research suggests that some of these laws have provided a false sense of security in what is, in fact, a risky situation (Duke and Malcolm, 2003).

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Incentives—Techniques that Alter the Relative Return of Converting Farmland

These techniques alter the relative return of converting farmland either through a “stick” approach or a “carrot” approach. They tend to be more politically feasible because they are “voluntary” in nature. A “carrot” might be using a PDR/PACE program to purchase the development rights. A “stick” might be increasing the mitigation requirements for converting farmland or extracting an impact fee to cover the cost of land-use changes.

Purchase of Development Rights (PDR) and/or Purchase of Agricultural Conservation Easement (PACE)

Land ownership can be seen as a bundle of rights. Some of these rights can be purchase and severed from the land while the farmer retains ownership. Under PDR/PACE programs, the rights to develop (convert) the land up to its allowable density are purchased and an easement is attached to the land. In most cases the easement restricts all future residential, commercial and industrial uses of the land. The easement binds not only the current owner but all future owners. The programs usually set the price they are willing to pay as the market value of the property in its highest and best use (usually development) minus the stream of income an owner will receive by continuing to farm the land. Some programs have begun to use a point system rather than an appraisal system to determine the easement value.

The federal government has established a Farmland Protection Program to work with state and local PDR/PACE programs to finance more easement purchases.

Novel Impact fees, Exactions, and Mitigation Ordinances

Impact fees, exactions, and mitigation ordinances are fundamentally the same technique—exactions—but vary in terms of what is exacted. Impact fees require that money be paid by the landowner (or the land purchaser/developer) to compensate the public for the harm associated with conversion.

Exactions require in-kind compensation; the landowner grants an easement or some other lesser estate associated with land in question to the public.

Mitigation ordinances are similar to exactions except the rights extracted can be applied to land other than the land being altered.

Impact fees and exactions are common techniques. By raising the cost of converting the land, the timing of such a sale or conversion is delayed. These fees, if determined by actual costs, mean that land further from existing services will be required to pay higher fees will also decrease the probability that land further from towns and cities are converted. Thus, one would be less likely to see leapfrog development.

Communities have also started to use these types of fees in novel ways. For instance, in *Ehrlich v. Culver City*³ a developer faced a set of impact fees, including a \$33,200 fee in lieu of the city's "art in public places program". Although this case involved the development of residential condominiums, the implication is clear—planners may use a great deal of creativity in designing exactions. Moreover, recent constitutional judicial review has established conditions for the determining the constitutionality of the exactions: the tests of essential nexus and rough proportionality.

Mitigation ordinances are a particularly novel use of exactions. This technique requires that

developers permanently protect one acre of farmland for every one acre they convert to non-agricultural use. This protection could come in the form of purchasing a conservation easement or paying a fee that would be put into a state or local fund for farmland protection purposes (American Farmland Trust 1997). This provides the same disincentive to develop farmland as an impact fee, but it provides a direct link to ensuring or funding preservation efforts.

Maryland uses this technique to ensure the retention of forest cover. A developer must either restore each acre of forest that they convert once the development is constructed or he or she must pay a fee-in lieu which covers the cost of the county or a private organization planting this number of trees in parks and other lands.

Davis, California required developers to protect one acre of farmland for each farmland acre they converted to another use. Developers could purchase a conservation easement on farmland or pay a fee in lieu.

King County, Washington also prohibits the conversion of an acre of land under agricultural zoning unless an acre of land of equal quality is added to the agricultural zone.

Mortgage Assistance

Modern agriculture now requires many producers to operate on ever larger acreage. At the same time, the value of land is increasing—especially land that has development potential. Thus, purchasing land becomes more expensive. The interest rate on loans for real estate purchases has been relatively low for a sustained period. A change in interest rates may alter a farmer ability to purchase additional land.

The government can help maintain land in agriculture by intervening in the mortgage market for agricultural land. At a basic level, the government could simply lower the cost of

³ 911 P.2d 429 (1996).

obtaining credit by expanding the tax benefits to farmers of borrowing or expanding assistance to suppliers of credit.

One could imagine subsidies, which offer targeted benefits during the times when conversion is the greatest risk. For instance, if the political process believes that interest rates of 12 percent and greater will cause too many farmers to exit agriculture, then mortgage assistance could kick in then. If such subsidies were justified in terms of preventing conversion, then the level of assistance should vary with the threat of conversion.

The impact of mortgages falls especially hard on young farmers who are trying to enter agriculture. Mortgage subsidies to new farmers would help them purchase land for agriculture and compete with developers.

Carroll County in Maryland established their Critical Farms Program to address this issue. As a new owner seeks to purchase a farm, he or she can enter the program and receive 75% of the money that an easement sale would provide from the County. The owner agrees to enter the state farmland preservation program and submits a bid to sell his or her development rights. If the state program purchases an easement on the property, the owner reimburses the County. If after a 5-year period, the state program has not purchased an easement on the property, the owner can 1) repay the County the payment plus interest or 2) let the County acquire the easement at the value paid. Thus, the program provides a minimum easement payment to help someone receive financing to be able to purchase the farm. The program has been used to help new farmers acquire their first farm, existing farmers acquire the additional acres they need to remain viable, and children of farmland owners to keep the farm in the family.

The USDA Farm Service Agency (FSA) also helps beginning farmers who do not have sufficient collateral to obtain a conventional loan. These Beginning Farmer Down Payment Loans are made for the less of 40% of the

purchase price of the land or 40% of the appraised value. They are 15 year loans at an interest rate of 4%.

FSA has two other types of loans that help farmers own and retain their farms. Direct Loan Ownership loans may be made up to \$200,000 for a period of up to 40 years. If half of the loan is provided by another lender, the interest rate is 5%. If FSA provides more than 50% of the loan, then rates will be based on the FSA cost of borrowing money. These loans can be used to purchase land, to construct buildings, and conduct other farm improvements. Another program, the Guaranteed Farm Ownership Loan Program, provides loans for similar purposes. These loans can reach \$762,000 for up to a 40 year period. The rates will vary but are not to exceed those of other lenders.

Programs that Enhance Economic Viability of Agriculture

Counties and states could design programs to support the economic base of agriculture. The most logical way to protect farmland is to ensure that farmers can make a profit. If this occurred, farmers will not have a financial incentive to sell their land for another use. Public policies that lower the costs or raise the benefits to agriculture are not new. Nevertheless, novel policies are continually being designed, which account for the most current agricultural technologies and marketing conditions.

Examples of these policies involve both direct and indirect government involvement. Various governmental bodies have taken an indirect role in promoting existing markets without control them. For instance, community sponsored agriculture (CSA) has become a popular technique for producers increase returns by marketing vegetables directly to consumers. USDA facilitates small-scale CSA by maintaining a searchable database so that

consumers can locate CSAs in their region.⁴ State and local governments have helped establish other direct marketing strategies like farmers' markets.

Counties have also supported business development specialists that focus on agricultural business to promote the retention of agricultural and its support industries in their counties. Carroll County in Maryland, for example, developed an agricultural marketing specialist position in the department of economic development. Besides working on commodity specific areas, the specialist deals with international marketing, infrastructure, and business retention and business attraction to strengthen and retain the agricultural sector in the county.

How profitable does agriculture have to be?

Other than programs to enhance the viability of agriculture, the regulatory decisions mainly establish the institutions supporting markets rather than have immediate fiscal impacts. So, the policy question becomes how to establish these institutions so that agriculture is profitable.

Land (houses and other real estate as well) has both a "use-value" and an investment value. Most people purchase a home as a consumption good – they use the home as living space – and as an investment good which they hope will appreciate. Agricultural land purchases often have similar goals – people use the land as an input into the production process and also expect they will receive some return from their investment. In Table 1, the price based on the "agricultural use-value" is presented for a range of net returns. Thus, if one purchased land solely for the productive value this is the price one would wish to pay.

However, given that land is purchased for both use as a productive input and as an appreciating

asset, we estimate the net returns or profit an agricultural enterprise would have to earn to retain the land in an agricultural use under various market values for land given both the use value and the investment value. We assume that land is appreciating at 3.5% per year and there is a discount rate of 4%.

As shown in Table 2, if the land value is \$2,500 per acre, one would need to earn \$35 per acre to retain the land in an agricultural use. The farmer earns more money by staying in agriculture and not selling the land for 30+ years than by selling today. If the local land value is \$9,000 per acre, the owner would have to earn \$125 per acre to stay in an agricultural use. This result is due to the landowner trading off the value he could receive today from selling the land with the agricultural rents and the capital gains he is accruing overtime. As a rule, when the land value is appreciating, the owner needs approximately \$7 per acre in net returns for each \$500 in value.

Because capital gains play a role in this analysis, one sees that unless some other approach is taken, at some point in the future the land will be sold for its "highest and best" use. Even with profits of \$125 per acre, the land value for its agricultural use value would only be \$3,125 per acre. Therefore, while increasing agricultural profits will delay conversion, if the land has value for purposes beyond agricultural use it will not prevent conversion forever to this alternative use.

⁴ <http://www.nal.usda.gov/afsic/csa/>
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Table 1
Price Based on Agricultural Use-Values for a Range of Net Returns

Net returns from agricultural production (per acre)	Use-Value of land (per acre)
\$35	\$875
\$41	\$1,025
\$48	\$1,188
\$55	\$1,375
\$62	\$1,550
\$68	\$1,700
\$75	\$1,875
\$82	\$2,050
\$89	\$2,225
\$96	\$2,400
\$103	\$2,575
\$110	\$2,750
\$117	\$2,925
\$125	\$3,125

Table 2
Profit or Net Returns Needed to Retain Land in Agriculture for 30+ Years when Value is Appreciating

Land Price (per acre)	Optimal Sales Year	Value in Year 31	Profit needed (per acre)
\$2,500	31	\$280,369	\$35
\$3,000	31	\$334,613	\$41
\$3,500	31	\$389,773	\$48
\$4,000	31	\$446,761	\$55
\$4,500	31	\$502,835	\$62
\$5,000	31	\$557,079	\$68
\$5,500	31	\$613,153	\$75
\$6,000	31	\$669,227	\$82
\$6,500	31	\$725,301	\$89
\$7,000	31	\$781,374	\$96
\$7,500	31	\$837,448	\$103
\$8,000	31	\$893,522	\$110
\$8,500	31	\$949,596	\$117
\$9,000	31	\$1,007,499	\$125

Note: Land appreciating at 3.5% a year; discount rate of 4%; 100 acre farm

Farms may be in areas where the value for residential or other non-farm uses is not appreciating at a high rate. If these areas have high land value for nonagricultural reasons, one would need a higher per-acre net return to retain the land in an agricultural use as the capital gains in each time period are lower. One might also want to include how much the value in an agricultural use is appreciating; if at all. This analysis assumes that the agricultural profit is constant.

“Lease” Conservation Easements

Agricultural landowners use the market to buy or sell leases. In part, leasing land allows owners to optimize the size of their operation and to be flexible about how much land to farm in that the length of the lease is often quite short. By extension, some of the landowners who chose not to participate in PDR/PACE might be attracted to a “lease” of conservation easements over a shorter timeframe.

Landowners already have familiarity with similar conservation programs, such as the Conservation Reserve Program (CRP), which uses annual rental rates to encourage farmers to implement conservation practices on their land. Strictly speaking, a nonpermanent conservation easement is still a conservation easement, just with a non-perpetual term. So, this technique helps focus attention on varying the time frame for conservation easements. The “lease” terminology, however, may be especially useful

in marketing such a program because it requires less commitment from landowners.

Since leases would be less expensive than permanent easements, this technique could be used to preserve, temporarily, critical areas during times when there are insufficient funds for higher levels of preservation. Moreover, because participation ought to be greater under the shorter timeframes, leases could also be used in a similar fashion to moratoria to stabilize a particularly threatened region until a more permanent solution could be adopted.

To estimate the size of lease payments, one can refer to Table 2 above or Table 3 below. Landowners in areas where land values are increasing will wait to sell if they have net returns sufficient to ensure that the increase in the land value (their capital gain) and the agricultural profit is greater than the annual value they lose from not selling their land.

In Table 2, we found a landowner needed approximately \$7.00 more in net agriculture for every \$500 of land value. If the land value is appreciating more slowly, such as in Table 3, a landowner needs approximately \$20 more in net returns for each \$500 of value to not sell their land. Of course, a market sale requires that there is a buyer.

In Table 4, we look at the annualized value for a 30 year period a landowner receives from selling their land and the corresponding value if he or she had sold a preservation easement in year 1.

Table 3
Profit or Net Returns Needed to Retain Land in Agriculture for 30+ Years if Value Appreciates Slowly

Land Price	Optimal Sales Year	Value in Year 31	Profit needed per acre
\$500	31	\$57,363	\$20
\$1,000	31	\$115,182	\$40
\$1,500	31	\$173,002	\$61
\$2,000	31	\$230,364	\$81
\$2,500	31	\$288,641	\$101
\$3,000	31	\$346,004	\$121
\$3,500	31	\$404,281	\$142
\$4,000	31	\$460,729	\$161
\$4,500	31	\$518,091	\$181
\$5,000	31	\$575,453	\$201
\$5,500	31	\$632,816	\$221
\$6,000	31	\$690,178	\$241
\$6,500	31	\$747,541	\$261
\$7,000	31	\$804,903	\$281
\$7,500	31	\$862,265	\$301
\$8,000	31	\$919,628	\$321
\$8,500	31	\$976,990	\$341
\$9,000	31	\$1,034,353	\$361

Land appreciating at 1% a year; discount rate of 4%; 100 acre farm.

Table 4
Easement and Land Values of Actual Participants in Maryland Agricultural Land Preservation Foundation

Number of Years	Term				
	0	15	20	25	30
	Actual value	Annualize Value of Easement Payments over different terms			
Average Payment per acre	\$2,511	\$226	\$185	\$161	\$145
Minimum Payment per acre	\$761	\$68	\$56	\$49	\$44
Maximum Payment per acre	\$9,444	\$849	\$695	\$605	\$546
	Actual value	Annualize Value of Market Value			
Average Land Value per acre	\$3,201	\$288	\$236	\$205	\$186
Minimum Land Value per acre	\$1,403	\$126	\$103	\$90	\$81
Maximum Land Value per acre	\$10,062	\$904	\$740	\$644	\$582
	Difference in Actual values	Annualized Difference between selling now and selling an easement			
Average	\$690	\$62	\$51	\$44	\$40
Minimum	\$642	\$58	\$47	\$41	\$41
Maximum	\$618	\$56	\$45	\$40	\$40
	Agricultural Use value	Annualized Stream of Agricultural income*			
Average	\$55	\$42	\$38	\$35	\$32
Minimum	\$35	\$27	\$24	\$22	\$21
Maximum	\$120	\$92	\$84	\$77	\$71

* These are hypothetical net returns

Tontine

Maintaining a critical mass of agriculture in a given area is considered an important goal of farmland preservation. The conversion decision of any one agricultural landowner in productive areas thereby affects the viability of his or her neighbors—even though that landowner has no responsibility to the neighbors to stay in farming.

A tontine is a contract that creates such multilateral duties by establishing a privately generated fund for which a critical mass of agricultural landowners holds rights. If landowners convert, then they concede their claim to the fund due to the costs their conversion imposes on their neighbors. The last remaining owner maintaining an agricultural use “wins” the fund. Thus, a tontine creates a

disincentive to conversion, which ought to penalize converters for the costs they shift to their neighbors. The penalty increases with conversion

This idea was conceived in the 1650’s in France as a way for the government to raise money using the tontine as a retirement annuity. For purposes of farmland preservation, one could imagine variations on how the principal is funded. The state could establish the fund in anticipation of the benefits of reduced conversion, or the state may aid with the contracting process among private individuals.

Circuit Breaker Tax

Use-value taxation has the effect of reducing property tax revenue. A circuit-breaker tax may

mitigate this issue because it does not grant the lower tax rate to all owners. Three states have implemented this type of tax relief: Michigan, New York, and Wisconsin. Farmers offset their property tax by claiming state income tax credits. Only if property taxes exceed a percentage of a landowner's income will they receive relief.

Wisconsin farmers who are in agricultural zones can receive the maximum farmland preservation credits. People with high property tax and low incomes receive larger credits up to \$6,000. High-income households can take a credit of 10 percent of the property tax or \$600. The tax relief credit equals 10 percent of the property tax unless the tax is greater than \$10,000. Agricultural landowners can claim both farmland preservation credits and tax relief credits up to 95% of the property tax liability.

Michigan farmers must agree to not build any non-farm structures or to sell their land for a 10-year period. Michigan landowners can claim credits for the amount of their property tax that exceeds 7 percent of their household income. If a farm family has an income of \$40,000 per year, it would receive a credit for property tax over \$2,800. There is a penalty if the family violates the 10-year agreement. In addition there is a 7-year rollback for those owners who do not renew their agreement after the 10-year time period.

New York's program targets farmers who receive at least two-thirds of household income from farming. Farmers who earn less than \$100,000 earn 100% of the benefits. Farmers who have higher household income receive partial credits. Farmland owners can be forgiven school taxes on farm buildings and up to 250 acres of land. If they own more than 250 acres, they are taxed at 50% the normal rate. New York also has a roll-back provision if a landowner converts their land to a non-farm use within three years of enrolling in the program.

Capital Gains Reduction Treatment

Many farm families have had their properties for many years and have seen substantial increases in land value. If farmers sell their property, even through an agricultural preservation program, they are subject to pay a capital gain tax on the sale price. If part or all of this capital gain was forgiven, it could encourage more farmers to participate. It would also increase the participation of farm families who have held the land the longest and have the least basis. This technique provides a differential benefit to selling to a land trust or farmland preservation program rather than a developer.

The gain from selling development rights depends a great deal on the basis in the farm. In Table 5, we compare Mr. Beatty, who has just purchased a farm, to Ms. Carter. Mr. Beatty's purchase price or basis and the fair market value are identical due to the recent purchase. Ms. Carter, on the other hand, has owned her farm for 50 years and has seen the value increase from the original purchase price of \$50,000 to \$550,000. Both farmers sell the development rights, which are valued at the fair market price of \$550,000 minus the agricultural value of \$200,000, which equals \$350,000. They will receive this \$350,000 as a lump sum payment from the agricultural preservation program. For both farmers, the percent of the easement value of the full market value is equal to 63.6 percent ($\$350,000/\$550,000$). They use this percentage to determine the basis they can deduct from the easement payment. For Mr. Beatty, this is 63.6 percent of \$550,000, which equals \$350,000. For Ms. Carter, this is 63.6 percent of the basis of \$50,000, which equals \$31,800, a much lower figure. When Mr. Beatty subtracts this percentage of the basis from the easement payment of \$350,000, there is no gain, thus no tax is owed. However, Ms. Carter finds tax is owed on \$318,200 ($\$350,000$ minus the basis of \$31,800). Capital gains taxes are 20 percent of this amount, \$63,640; the tax bill is \$63,640.

Thus if Ms. Carter was given a capital gains tax reduction, she would be more likely to receive a larger amount of the easement payments or alternatively she would be willing to accept a

lower payments. This would decrease the cost to the agricultural land preservation program and encourage long-time owners to enroll.

Table 5
Calculating the Basis for Selling Development Rights

	Mr. Beatty	Ms. Carter
Purchase price of farm	\$550,000	\$50,000
Fair market value	\$550,000	\$550,000
Appraised easement value	\$350,000	\$350,000
Ratio of easement value to farm market value	$\$350,000/\$550,000 = 63.6\%$	63.6%
Allocating basis (ratio x basis)	$0.636 \times \$550,000 = \$350,000$	$0.636 \times \$50,000 = \$31,800$
Capital gain	$\$350,000 - \$350,000 = 0$	$\$350,000 - \$31,800 = \$318,200$
Tax on gain	0	$\$318,200 \times 0.20 = \$63,640$

Installment Payments

If a farmer receives part of the easement payment after the close of the tax year of the easement sale, this is considered an installment sale. He or she must report the part of the gain or profit that you receive in each installment payment in the year the payment is received. The installment payments usually consist of three parts: gain on the sale, interest income, and return of your basis in the property. Taxes are computed on the gain and the interest payments in the tax year that you receive them. The interest income from each payment is reported as ordinary income and will be taxed at your income tax rate. To determine the basis to use, you compute what percent of the full value of the land is represented by the easement value. The farmer uses the percentage in the same way as is demonstrated in Table 5 to compute the proportion of the original basis you can apply to this easement sale. The gain is the part of each

installment payment that is the gross profit from the sale.

For example, Mr. Zeller sells an easement on a 50-acre property, which has a fair market value of \$400,000, for \$200,000. The property's basis is \$100,000. For the easement sale, the basis would be 50 percent ($\$200,000/\$400,000$) of the total basis ($\$100,000 \times 0.50$), which equals \$50,000. Thus, the gross profit from the easement sale is \$150,000 ($\$200,000 - \$50,000$). The gross profit percentage is the profit from the sale divided by the fair market value: $\$150,000$ divided by $\$400,000$, which equals 37.5 percent. One determines the appropriate net payment by taking each installment payment minus the interest portion. One takes 37.5 percent of this net payment as the gain from the sale in the tax year that the installment payment is received. For Ms. Carter and other farmers who have seen substantial appreciation in their property values, installment payments of the easement value may

be a better payment plan. Ms. Carter could receive interest on the money that would have been paid out for capital gain taxes in the first year. The capital gain taxes paid will be the same, whether under a lump-sum or an installment payment plan. The difference for Ms. Carter in the two payment systems is shown

in Table 6. The installment sale plan earns Ms. Carter an extra \$16,234 in interest income after paying taxes on the extra income. This can be viewed as similar to the benefits of deferring taxes. It also benefits the program by enrolling more property earlier usually at a lower price.

Table 6
Comparing Lump-sum versus Installment Payments for Ms. Carter

	Lump-sum		10-year Installment Payment	
Assumed Capital gains taxes due		\$62,860		\$62,860
Capital gain tax due each year	Year 1	\$62,860	Year 1	\$6286
	Year 2	\$0	Year 2	\$6286
	Year 3	\$0	Year 3	\$6286
	Etc...	\$0	Etc...	\$6286
Total interest @ 6%		0		\$22,547
Ordinary income tax on interest @ 28%		0		\$ 6,313
Net interest earned		0		16,234

Bargain Sales/Charitable Deductions

This technique allows an organization to acquire a property partly as a sale and partly as a gift. The seller sets a price below market value and considers the rest to be a gift. The seller may then be eligible for a charitable tax donation (Stokes et al, 1997).

If one sells an easement for less than its appraised value, he or she can claim a charitable deduction of the difference between the appraised value and the actual payment. Some programs such as MALPF base their payment on the lower of the appraised easement value or the asking price from a landowner. This permits landowners to ask or bid a lower price in hopes of being

one the landowners selected in a particular year. Because of this, a landowner may receive a payment that is lower than the easement value. For this shortfall, the owner can file an IRS Form 8283 for Noncash Charitable Contributions in the year the easement was sold.

For example, Mr. Harris has development rights valued at \$500,000 but receives a payment of \$400,000. Mr. Harris can take a charitable deduction on his income taxes of \$100,000. The easement provisions must satisfy Section 170(h) requirements to be eligible for this deduction. Maryland agricultural land preservation programs' easement provisions will satisfy these requirements in almost all cases. The IRS

permits a landowner to deduct only 30 percent of his or her adjusted gross income in any one year. Thus, if Mr. Harris had an adjusted gross income of more than \$350,000, then he could deduct the full “gift” of \$100,000 in one year. If Harris has an income equal to \$75,000, then he can deduct \$22,500 in the first year and in each of the following years, up to five additional years. The donation can be spread out for up to six years. In most easement sales with a partial bargain sale, landowners will receive a large payment which will be added into the income. Therefore, in this case, Mr. Harris received \$400,000 for the easement, more than enough money to deduct the entire \$100,000 as a non-cash contribution. Even if the Harris farm did not produce a high income, the easement payment increases the income sufficiently.

When calculating the tax implications, Mr. Harris wants to take into account how this deduction will change the capital gains. Table 7 demonstrates the calculation for the Harris farm. The Harris land has a fair market value of \$750,000 and an agricultural value of \$250,000, thus an easement value of \$500,000. The basis of the land is \$350,000. Mr. Harris can apply 66.7 percent of this basis against the easement sale ($\$500,000/\$750,000$), which equals \$233,333. Thus, the total gain on the easement sale is the purchase price of \$400,000 minus the basis of \$233,333, which equals \$166,667. Because the easement is valued at more than the payment received, Mr. Harris can also take a charitable deduction of \$100,000. The capital gains tax is 20 percent of \$166,667, which equals \$33,333. The income tax savings from the charitable deduction is 28 percent of \$100,000, or \$28,000, assuming the Harris family will be in the upper income bracket. Therefore the resulting tax

owed due to the easement payment is \$5,333.

An outright donation of an easement to an agricultural preservation program or land trust can also be treated as a charitable deduction. The value of the charitable deduction is the difference between the fair market price with no restrictions and the value of the property restricted by the easement. If the easement is valued at \$300,000 and given as a donation with no payment received, the landowner can deduct \$50,000 per year for a total of six years, so long as his or her annual income is more than \$167,000.

Charitable Deductions

If an owner sells an easement for less than its computed value, he or she can claim a charitable deduction of the difference between the computed easement value and the actual payment from the preservation program. In this case, both Farmers Smith and Jones have owned the land for a long time. They receive an easement payment equal to \$212,597 although the easement value is \$318,740. The difference between the easement value and the payment can be taken as a charitable deduction of \$106,143. The limitation is that in any one year the deduction cannot exceed 30 percent of adjusted gross income. Lower income landowners such as retired farmers may not be able to take the full deduction in the first year, which could increase the tax liability. High income landowners could deduct the full amount of \$106,143. Farmer Jones has a lower income being retired and renting out the land. Thus, Jones can only deduct \$62,793 of the charitable deduction in the first year (30 percent of \$209,309). The remainder can be deducted over the next five years. If the adjusted income for the

Joneses remains at \$30,000, the deduction in the next five years could be \$9,000 or \$45,000 total, and eventually the entire charitable contribution could be taken. If the Joneses' per year income decreased, it is possible that the entire deduction could not be taken over the remaining period. These

lower income farmers such as Farmer Jones save a higher percentage of their taxable income with this legislation changing the relative incentives. Jones saves \$7,051, or 4.85%, of the taxable income. Smith saves \$8,695.00 or 3.50%, of the taxable income.

Example 1. Difference between High-Income and Low-Income Landowners

	Farmer Smith	Farmer Jones
Purchase price of the farm	\$ 43,800	\$ 43,800
Fair Market Value	\$420,036	\$420,036
Easement Value	\$318,740	\$318,740
Easement Payment	\$212,597	\$212,597
Charitable Donation	\$318,740-\$212,597= \$106,143	\$318,740-\$212,597=\$106,143
Capital Gain	\$212,597-\$33,288=\$179,309	\$212,597-\$33,288=\$179,309
Allowable Deduction (30% of adjusted gross income)	\$106,143	\$62,793
Taxable Income: (Off-farm +Farm Income + Capital Gain-Deduction)	\$30,000+\$145,000+\$179,309 - \$106,143= \$248,016	\$20,000+\$10,000+\$179,309-\$62,793=\$146,516
Maryland Tax (with gain)	\$11,981.00	\$7,051.00
Maryland Tax (without gain)	\$3,278.00	\$0.00
Difference	\$8,695.00 (3.50%)	\$7,051 (4.85%)

Table 7**Easement Sale with Charitable Donation**

Original purchase price (basis)	\$350,000
Fair market value	\$750,000
Easement value	\$500,000
Ratio of easement value to fair market value	$\$500,000/\$750,000 = 0.667$
Basis to apply to easement sale	$\$350,000 \times 0.667 = \$233,333$
Payment received for easement	\$400,000
Charitable donation = easement value – payment	$\$500,000 - \$400,000 = \$100,000$
Income tax savings with deduction ^a	$\$100,000 \times 0.28 = \$28,000$
Capital gain tax on easement payment	$\$166,667 \times 0.20 = \$33,333$
Tax owed	$\$33,333 - \$28,000 = \$5,333$

^aThis may overstate the tax savings from the charitable contribution if other itemized deductions are less than the standard deduction.

Recapture Taxes

This fee is imposed on the farmer for leaving a contract or converting his or her land before the term is completed. The government uses this tax to “recapture” or gain back the forgiven taxes due to preferential taxation. These taxes slow the rate of farmland conversion by changing the relative benefits of remaining on the farm. American Farmland Trust calls these programs deferred taxation because of the penalty the owner must pay when leaving farming. They list 29 states that have this type of program. Some of the programs impose a “transfer tax” and others impose a “rollback” penalty. A rollback penalty is based on the amount of tax benefits the individual landowner has accrued and the number of year the land had received prior to being converted.

Transfer Tax

This is a tax based on the market price of the land or a fee imposed on the seller of the farmland. The government can use the proceeds from this fee to fund conservation easements or to purchase development rights. This tax alters the relative return of converting the land. The higher the transfer tax, the longer the land will remain in agriculture.

Maryland uses an agricultural transfer tax to fund its agricultural land preservation programs. When agricultural land is converted to another use, an agricultural transfer tax of between 3-5 percent is applied. This tax provided \$2.6 million to MALPF and \$8 million to counties for farmland preservation in fiscal year 2000. Counties with a certified agricultural land preservation program receive three-quarters of the agricultural land transfer tax on

county parcels. Other counties receive one-third.

Yet, while a transfer tax may slow development and raise money for preservation, it and other recapture taxes may be inadequate sources of funds. Basically, a significant amount of farmland needs to be converted to finance the preservation of one acre of farmland.

Lynch and Lovell did some simple calculations for three Maryland counties. They assume the only funding source is the agricultural transfer tax and that easements were purchased at the average easement value for the county. Given that, to preserve one acre of land in Calvert County, \$64,080 worth of Calvert farmland would have to be converted, in Carroll \$31,067 worth and in Howard \$124,933 (Lynch and Lovell 2002). Using the Agricultural Census’ 1997 value of land and buildings per acre of \$3,584 in Calvert, \$3,694 in Carroll, and \$5,518 in Howard, this means that almost 17.9 farmland acres in Calvert, 8.4 acres in Carroll, and 22.6 acres in Howard would need to be converted to finance the preservation of one acre (United States Department of Agriculture, 1997).

Nickerson and Lynch (2001) found that the actual sales prices for farmland were higher than those reported in the Agricultural Census. The average arm’s-length sales price of unpreserved farmland sold between 1990 and 1997 in these three counties was \$8,998 per acre. Using this higher price still results in the conversion of 7.1 acres in Calvert, 3.5 acres in Carroll and 13.9 acres in Howard to finance the preservation of one acre.

Revolving Funds

A revolving fund may be a freestanding organization or part of another organization's capital that it uses on a revolving basis (Stokes et al, 1997). The properties are purchased and then sold to buyers who agree to manage the property under the specified instructions and restrictions.

State Income Tax Forgiveness

Like capital gains and donations, farmers have differential impacts of easement payments depending on their length of ownership, land appreciation and income levels. If part or all of the state income tax was forgiven, then different farmers may have incentives to join. Thus, we might see an increase in the number of farmers interested in preservation program participation.

Landowner may be willing to accept a lower easement value thus lowering the cost of the program. This could result in more acres being preserved. We would expect that the program would become more attractive for long-term agricultural landowners as well as lower-income farmers such as retirees.

Tax relief will change the incentive for different types of farmers. In example 1, we find two farmers, Farmer Evans and Farmer Carter. Evans recently purchased the property. Therefore, the purchase price is equal to the fair market value. Thus, the basis in the property allocated to the easement sale equals the easement value. The capital gains owed by Evans are zero. Therefore, even though the Evanses sold an easement, their tax burden on their taxable income is only \$2,492. Farmer Carter bought the farm many years ago and has a very low basis. The tax burden for the Carters equals \$17,426, as above. By providing tax relief for long-term owners, these owners can sell an easement without incurring a large tax burden on the state level similar to the more recent owner. While the Evanses do not benefit from the legislation since they were not paying taxes on the gain from the easement sale, the Carters save \$14,934 in taxes. The likelihood that owners like the Carters would participate should increase in this type of legislation.

Example 2. Difference between Long-term Owners and Recent Purchasers

	Farmer Evans	Farmer Carter
Purchase price of the farm	\$420,036.00	\$43,800.00
Fair Market Value (FMV)	\$420,036.00	\$420,036.00
Easement Value=FMV-Ag Value	\$318,740.00	\$318,740.00
Ratio of Easement Value to Farm Market Value	\$318,740/\$420,036= 76%	76%
Allocating Basis	0.76 x \$420,036=\$318,740	0.76 x \$43,800=\$33,288
Capital Gain	\$318,740-\$318,740=\$0	\$318,740-\$33,288=\$285,452
Adjusted Gross Income: (Off-farm (\$30,000) +Farm Income (\$45,000) + Capital Gain)	\$75,000	\$360,452
Maryland Tax (including Easement Sale)	\$2,492.00	\$17,426.00
Maryland Tax (excluding Easement)	\$2,492.00	\$2,492.00
Difference	\$0.00	\$14,934

Novel Participatory Techniques

Land Banks

This involves a government buying the parcel of land before the community has been developed. The price for the land is less because no development has yet occurred. The land is thus “banked” and preserved from development.

Eminent Domain

Eminent domain has been used by governments to acquire land that is needed for road or other public building projects. The government could exercise the mechanism to buy farmland for the current market value. Farmers have usually feared the use of eminent domain as a way for the government to *take* farmland for alternative purposes. However, it can also be viewed as a way for the government to *keep* vulnerable farmland safe from conversion.

After condemnation, the government could resell the property for agriculture with a severed development right. Alternatively, the government could retain the property for an alternative use. By keeping the land, the government would have the cost of maintaining the property and any income stream it generated.

The primary shortcoming with eminent domain is that it is coercive and therefore unpopular. Other drawbacks of this approach are that the government has to purchase the land, which is more expensive than purchasing development rights, and then it either needs to sell the land to another farmer (potentially taking a large loss) or maintain it which is expensive.

This may be a difficult mechanism to exercise for program administrators. First, they would need to justify the purchase of individual parcels and determine the fair market price to offer. Second, they would need to determine under what conditions (such as when) to exercise this option. In addition, they would now have the selling of the land to administer.

Right of First Refusal

Right of first refusal has been used in the real estate markets to protect renters from having their homes sold out from under them. It also has been used by third parties to ensure that they are “at the bargaining table” whenever an owner decides to sell and receives an offer from a buyer.

Rights of first refusal differ from options. Options are exercised by the option holder. Rights of first refusal are “activated” by the property owner. Even if there is no term recorded with the right of first refusal, it may never be activated.

This mechanism could protect farmland by making the government the “interested” third party in the sale of farmland for development. If a government entity had secured from a farmer the right of refusal, then at the time when a farmer has received an offer and has decided to sell his or her land this, the governmental body could decide whether or not to match the negotiated price.

By paying the price equal to that of the existing offer, the government prevents the conversion of the land. Moreover, the government will still hold title to a valuable asset. For instance, a conservation easement could be recorded on the property and then resold in the farmland market.

Novel Hybrid Techniques

Eminent Domain/ROFR

We believe it may be possible for governments to condemn rights of first refusal on critical agricultural lands. By taking such rights using eminent domain, a government would have to compensate owners for the fair market value of these rights.

An alternative would be to make participation in agricultural preservation or commodity programs contingent on granting rights of first refusal to state or local governments.

Using Land Value as a Pension Plan/PDR

This technique gives farmers an incentive not to sell their land to developers because as owners of farmland, they would receive retirement aid from the government. In exchange, they would grant some preservation benefit to the state—presumably a conservation easement.

Often farmers will say that the equity in their land is their retirement fund. If another source of these funds could be supplied, then the owners would not need to sell for development. By guaranteeing pension benefits, the government eliminates the risk exposure farmers incur given that their accumulated savings may be too low to retire on the proceeds of selling their land to another farmer rather than for development. The savings of farmers may be low due to unfortunate cyclical patterns that occur near the time of retirement or because returns to farming are continually low. States are better positioned to insure against cyclical savings risks than individual farmers

Rights of first refusal can be a win-win situation for both the government and the farmer. Unlike other preservation programs, the government does not pay any money—or, only nominal sums for the right—until an offer has been made and the farmer has decided to sell. In this sense, the strategy is cost effective. If the government determines that this particular farm does not fit its needs/goals/budget at this time, it could decide not to match the price.

The farmer should also receive the developed-use value of the farmland because developers have an incentive to make legitimate offers—the offer may be accepted after all—even if they are aware that the parcel of land is already subject to a right of first refusal.

The drawbacks of this approach is the government has to purchase the land which is more expensive than purchasing development rights and then it either needs to sell the land to another farmer (potentially taking a large loss) or maintain it which is expensive.

Developers may be opposed to this option since they will have invested resources in developing the offer. It also could decrease the supply of land available which will increase the price.

Farmers and developers could potentially collude to increase the price of the land. This may a difficult mechanism to exercise for program administrators. They would need to justify the purchase of individual parcels. In addition, they would now have the selling of the land to administer.

because they can pool risks over the population of farmers.

The state benefits from this technique because it does not have to bear the entire financial burdens of PDR/PACE in the present. Moreover, the gains from risk pooling reduce the aggregate expenditures.

Consider the following example in which farmers voluntarily opt-in for a “retirement annuity” in exchange for their development rights. Ideally, the state would use the economies of scale associated with its pension plan, but the retirement annuity gives a glimpse of the power of this technique.

In Table 8, it is assumed that the State starts with \$10,000,000 in 2003. Farmers sign up for the program in exchange for their development rights. It is assumed that the fund will grow at 5 percent each year and that the farmers participating are 49 years old. The fund therefore grows until 2019 when all farmers retire and begin receiving \$60,000 a year. There is no cost of living adjustment (COLA).

Under these conditions, the fund would last for 20 years, and could fund 26 farmers. If these farmers had an average of 200 acres, then 5200 acres of development rights could be exchanged for the \$10,000,000 stake.

Table 8

Retirement Annuity

Year	Fund Value	Year	Fund Value	Year	Fund Value	Year	Fund Value
Initial stake-							
2003	\$ 10,000,000	2012	\$ 15,513,282	2021	\$ 18,902,397	2030	\$ 11,262,310
2004	\$ 10,500,000	2013	\$ 16,288,946	2022	\$ 18,209,517	2031	\$ 10,187,425
2005	\$ 11,025,000	2014	\$ 17,103,394	2023	\$ 17,481,993	2032	\$ 9,058,797
2006	\$ 11,576,250	2015	\$ 17,958,563	2024	\$ 16,718,093	2033	\$ 7,873,737
2007	\$ 12,155,063	2016	\$ 18,856,491	2025	\$ 15,915,997	2034	\$ 6,629,423
2008	\$ 12,762,816	2017	\$ 19,799,316	2026	\$ 15,073,797	2035	\$ 5,322,895
2009	\$ 13,400,956	2018	\$ 20,789,282	2027	\$ 14,189,487	2036	\$ 3,951,039
2010	\$ 14,071,004	2019	\$ 20,190,746	2028	\$ 13,260,961	2037	\$ 2,510,591
2011	\$ 14,774,554	2020	\$ 19,562,283	2029	\$ 12,286,010	2038	\$ 998,121

Alternatively, the program could be established like a reverse mortgage to convert the land equity—or the conservation easement increment—into cash to live on during retirement. In this case the farmer could extract a percentage of the land’s value each year to finance living expenses. The government could ensure these payments will continue for life of the owner and/or spouse in exchange for an easement or outright sale of the land.

When the owners die, the estate would be settled so that the land is sold for farming purposes and the following owner would not be eligible to participate in the pension plan.

Point Systems

Some farmland preservation evaluations have suggested that programs are not preserving the “best” or “most productive” farms. A point system based on the desired characteristics allow each projects or parcels

to be evaluated and paid an easement value which should reflect the program's goals for preservation. LESA (land evaluation and site assessment) is the most widely used point system. As the most valuable farmland can be recognized, this strategy allows for better decision-making. This could also be a means of determine easement payments. Weibe, Tegene, and Kuhn (1996) found that standard appraisal methods are difficult to apply to the valuation of development rights as neither the future development rents nor the time of development are observed.

The Maryland Rural Legacy program introduced in 1997 has decided to permit characteristic-based easement valuation. It uses an easement valuation model to 1) ensure that the payment is sufficient given the parcel's agricultural, forestry and natural resource qualities, which the program is designed to protect, and the fair market value for the area, 2) identify the most desirable properties to preserve, and 3) streamline the process relative to traditional appraisal-based systems (The Rural Legacy Program Grants Manual 2001).

Transfer of Development Rights

Under a TDR program, the local government establishes a sending area (where farmland protection is desired) and a receiving area (where growth is desired). Land in the sending area can transfer its right to develop up to the allowable density to land in the receiving area. The developers who use the increased density in the receiving area compensate the landowners for their rights to develop. An easement or deed restriction is attached to the land which has transferred its rights. Development occurs in the receiving area

then at a higher density than its original zoning or permitted allowance.

Under these programs, the financing for the agricultural land preservation comes from the developer who is willing to purchase the rights from farmers to increase density where he or she wants to develop. Thus the governmental expenditure is very limited. Unlike under many PDR/PACE programs, the rights to develop are not retired in a TDR program but are just redirected to another area. Thus, the number of houses built under a TDR program in a county may not be lower than that established by current zoning whereas under a PDR/PACE program the number of houses to be built may decrease.

The quality of life in the receiving area may change especially for existing residents given the increased density. This has resulted in some "not-in-my-backyard" sentiment on the part of local areas that are designated receiving areas.

In addition, farmland will not be preserved unless there is a demand for increased density on the part of the developer.

Marketable Development Rights

A marketable development rights (MDR) is similar in construction to a TDR program; however, they differ in that MDR has no sending or receiving zone. Rather, a single area is selected and a level, X, of additional aggregate development in this area is selected by the planning process. Then, development rights to X are allocated evenly to all landowners in the area.

This technique has recently been advocated by Thorsnes and Simons (1999), who argue that it avoids problems with TDRs. First,

potential inequitable treatment among landowners is avoided because there are no zones, which give rise to differential impacts. Second, thin TDR markets, resulting from failures by planners to correctly anticipate future market conditions, are avoided. Thornes and Simons (1999) note that when TDR markets do not perform as expected, planners attempt to "fix" the markets ad hoc. This dramatically undercuts the credibility of such property rights.

to be in an agricultural district to be eligible to sell an easement.

One criticism of MDR is that it does not ensure any pattern of development in the affected areas. As such, agriculture might end up being highly fragmented. The MDR approach also accounts poorly for positive and negative externalities associated with land use. The fundamental benefit of zoning is that like uses tend to be adjacent, thus allowing for the minimization of negative externalities from incompatible land uses. By sacrificing the zoning aspects of TDR, MDR similarly fails to account for externalities.

Agricultural Districts

Agricultural districts are similar to APZ in that they set aside an area of farms for agricultural use. In these areas, farms have special protections and agricultural activities are supported. Unlike APZ, district formation tends to be voluntary and conversion is prohibited only for a specific time-period.

Sixteen states have agricultural district laws with a wide range of incentives offered to landowners who form such districts. These include eligibility for differential or use-value assessment, right-to-farm treatment, and insulation from adjacent non-farm uses. Some PDR/PACE programs require farmers

Implementation

The preceding explanation of novel techniques includes discussion of their likely fiscal impacts, which affects in large part their potential acceptability to legislative and executives bodies. The likely acceptability to landowners and neighbors was also assessed. These acceptability measures are summarized with the other evaluative conclusions in Table 9.

What was not included, however, is to what degree program administrators would be willing to embrace these policies. Program administrators are assumed to act in the public interest, subject to constraints by landowners and other governmental bodies. As such, this section discusses the degree to which novel techniques achieve the goals of farmland preservation and other impediments to implementation.

The Goals of Farmland Preservation

Consider the variety of goals warranting state preservation activities. Delaware, for instance, identifies several goals in its purchase of agricultural conservation easements (PACE) enabling statute:

1. To maintain agriculture as a viable industry;
2. To maintain agriculture as an important contributor to Delaware's economy;
3. To create sufficient economic incentives to encourage agricultural landowner participation; and
4. To create permanent agricultural areas of viable farmland and forestland to serve the agricultural community and other Delawareans.⁵

⁵ These goals are adapted from the statute enabling Delaware's PACE program, 3 Del. C. § 901 (2002).

In contrast, Maryland has stated that preservation programs should preserve agricultural land and woodland:

1. To provide sources of agricultural products;
2. To control urban expansion; and
3. To protect open-space land.⁶

A recent national analysis of state enabling legislations for various preservation programs has identified five categories of goals:

1. Orderly development;
2. Food security;
3. Local economy;
4. Environmental services;
5. Protection of rural amenities.⁷

States tended to mention food security, environmental services, and protection of rural amenities more frequently than orderly development and local economy.⁸

These goals include maximizing the number of acres preserved; preserving productive farms (large farms, prime soils, crop use); preserving contiguous farms (large blocks of land); and preserving farms most threatened by development (close to the city or town). These would all ensure the continuing economic viability to the agricultural sectors and provide rural landscapes and other amenities. Regulatory techniques could accomplish this if they are found to be politically palatable. Alternatively, voluntary programs that provide adequate incentives and enroll sufficient acreage

⁶ Maryland Agricultural Land Preservation Foundation, 2001

⁷ Daniel Hellerstein, et al. 2002. Farmland Protection: The Role of Public Preferences for Rural Amenities. USDA, Economic Research Service: Agricultural Economic Report No. 815.

⁸ Hellerstein, et al., p. 22.

could achieve these goals. Tax programs have also been promoted to alter incentives for landowners between preservation and conversion.

Comparative Evaluation and Summary

Table 9 presents a summary of the evaluation of the factors, which may affect the success of any novel techniques:

1. Financing
2. Implied right holder
3. Duration
4. Persistence of property rights
5. Goal—maximize acres enrolled
6. Goal—conversions prevented
7. Goal—maximize productive farms
8. Goal—maximize critical mass
9. Agricultural landowner acceptance
10. General public/tax payer acceptance
11. Environmentalist acceptance
12. Developer acceptance
13. Forest industry acceptance
14. Simplicity of implementation
15. Ability to attract nonparticipants

The first and fifteenth factors may be of the most immediate concern to program managers. Program managers already use a set of techniques to achieve farmland preservation goals, but face two sets of resistance. Legislatures are less willing to allocate new funds, or even maintain previous funding levels, in times of budget shortfalls. Techniques that force landowners and others who work against farmland preservation goals to bear the costs of preservation are therefore popular. Unfortunately, self-financing programs tend to be unpopular with important interest groups and also may be unlikely to trigger

participation by landowners who have avoided farmland preservation heretofore.

It is also important to consider how techniques imply which party is the owner of the right to develop (and thereby infringe on farmland preservation goals). Zoning-based techniques tend to locate the right to develop with the public, while “carrot”-type incentive programs locate the right with the landowner. A great deal of public-acceptance results likely derives from the implied property rights allocation. Moreover, program managers must consider the overall coherence of their implemented techniques. Most obviously, program managers who have relied on PACE (where the right resides with landowners) are going to face a great deal of landowner opposition and regulatory takings claims if they try to implement a technique that uses downzoning (which reduces the value of the development increment).

The third and fourth factors consider the substantive effect of the technique’s intervention on property rights. “Duration” evaluates the explicit or implicit length of time the technique can be expected to promote farmland preservation goals. “Persistence” assesses the implied credibility of the property rights allocated by the technique. Any zoning-based policy will have a limited duration because rezoning is inevitable, if not necessarily common. In addition, most rights allocated by zoning will have a built-in appellate procedure (variances, nonconforming uses, etc.) that allow dissatisfied or unduly encumbered landowners to intensify their uses of land.

Table 9 also considers factors relating to the goals of farmland preservation (#5 - #8) and stakeholder acceptance (#9 - #13).

The fourteenth factor assesses how easily each technique may be implemented. Although this should vary by area, some techniques put more burdens than others on program managers. For instance, program managers have experience with and capacity for using eminent domain, so any technique using condemnation ought to be easier to implement. In contrast, TDR and MDR require a great deal of buy-in by important stakeholder groups and planning by program managers to ensure that the markets function correctly.

<i>Tech</i>	<i>Financing¹</i>	<i>Right Holder²</i>	<i>Duration³</i>	<i>Persistence⁴</i>	<i>Maximize Acres⁵</i>	<i>Conversion Prevented⁵</i>	<i>Maximize Productive Farms⁵</i>	<i>Maximize Critical Mass⁵</i>	<i>Agricultural Landowner⁶</i>	<i>General Public-Tax Payers⁶</i>	<i>Environmentalists⁶</i>	<i>Developers⁶</i>	<i>Forest Industry⁶</i>	<i>Simplicity of Implementation⁷</i>	<i>Attract Nonparticipants⁸</i>
Regulatory															
Growth Boundaries	S	P	Pm	Fl	+	+	+	+	--	+	+	--	+	-	++
State Exec Orders	TB	P	Pm	Ps	+	+	+	+	-	+	+	--	0	-	++
Growth Management	S	P	Pm	Fl	+	+	+	+	--	+	+	--	+	-	++
Ag Prot Zoning	S	P	Tm	Fl	+	+	+	+	-	+	+	--	+	-	++
Cluster Zoning	S	P	Tm	Fl	+	+	+	0	0	0/+	0/+	-	0	-	++
Right to Farm Laws	S	P	Pm	Fl	+	-	+	+	+	+	-	-	0	0	-
Incentive Based															
PDR/PACE	TB	L	Pm	Ps	+	-	++	+	+	+	0	-	+	+	--
Exactions	S	P	Tm	Fl	0	-	--	0	--	++	+	--	0	0	+
Mortgage Assistance	TB	L	Tm	Ps	+	0	0	+	+	+	+	+	+	+	0
Leasing ACE	TB	L	Tm	Fl	+	+	0	+	+	+	+	-	+	+	+
Tontine	S/T	L	Tm	Ps	+	0	+	++	+	+	+	0	+	0	+
Circuit Breaker Tax	TR	-	Tm	Ps	+	+	+	+	0	+	+	0	+	-	0
Capital Gains Reduction	TR	L	Pm	Ps	+	+	+	+	+	+	+	-	+	+	++
Installment Payments	-	L	Pm	Ps	+	+	++	+	+	+	+	0	+	+	++
Bargain Sales	TB/TR	L	Pm	Ps	+	+	+	+	+	+	+	0	+	+	++
Recapture Taxes	S	P	Tm	Ps	+	+	+	+	--	+	+	--	+	+	0
Transfer Tax	S	P	Tm	Ps	+	+	+	+	--	+	+	--	+	+	0
Revolving Funds	TB	L	Tm	Ps	+	+	+	+	+	+	+	0	0	+	+
State Income Tax Forgiveness	TR	L	Pm	Ps	+	+	+	+	+	+	+	-	+	-	++
Charitable Deductions Programs—Viability of Ag	TR	L	Pm	Ps	0	0	+	+	+	+	+	--	+	0	+
	TB	N	Tm	Fl	+	--	++	+	+	0	-	0	0	+	-
Participatory															
Land Banks	TB	L	Pm	Ps	-	0	0	+	0	-	+	--	?	++	++
Eminent Domain	TB	L	Pm	Ps	-	0	0	+	-	-	++	--	?	++	++
Rights of First Refusal	TB	L	Pm	Ps	-	++	+	+	0	0	0	--	?	+	++
Hybrid															
Eminent Domain/ROFR	TB	L	Pm	Ps	-	++	+	+	-	+	0	--	?	0	++
Pension Plan/PACE	TB	L	Pm	Ps	++	-	-	0	++	-	-	-	+	0	++
Point Systems	TB	L	Pm		0	++	++	++	+	+	+	-	-	++	++
TDR	S	L	Pm	Fl	+	--	--	+	-	+	-	-	0	-	+
MDR	S	L	Pm	Fl	+	--	--	--	--	0	-	-	0	-	+
Agricultural Districts	S	L	Tm	Fl	+	+	+	+	+	0	0	0	+	+	0

¹ Beyond the costs of administration, what is the source of the financing for this technique? TB = General tax revenues and bonds; TR= tax reducing; S = Self funding or private funding by affected parties (right holders are compensated by non-right holders)

² Implied holder of rights to develop at intensities above prevailing agricultural uses: L = Agricultural Landowner; P = Public; N = None specified

³ How long is the preservation supposed to last? Pm = Permanent; Tm = Temporary

⁴ *The credibility of persistence. How easy is it to redefine rights, say through variances? Ps = Persistent; Fl = Flexible*

⁵ *The goals of farmland preservation. For these four goals, does the technique promote one goal much more (++), more (+), less (-), or much less (--) effectively than the average (0) novel technique. If unclear, then (?)*

⁶ *Acceptance of technique by interest groups. For each group, will the technique tend to have high (++), somewhat high (+), somewhat low (-), or low (--) acceptance than the average (0) novel technique. If unclear, then (?)*

⁷ *Simplicity of implementation. Some techniques will tend to be much easier (++), easier (+), harder (-), or much harder (--) than the average (0) novel technique to implement. If unclear, then (?)*

⁸ *Does the program have an ability to attract (or force) those not participating in existing farmland preservation efforts? Unusual ability (++), some ability (+), little ability (-), or very low ability (--) than the average (0) novel technique to implement. If unclear, then (?)*

Summary Comparative Financial Impact Analysis

A useful way to summarize the findings of this report is to consider an example that reveals the comparative fiscal impacts of the various techniques. For example, assume:

- **A state has \$10 million to spend on farmland preservation.**
- **There are 550,000 acres of farmland in the state**
- **There are 200,000-300,000 acres of productive farmland that it would like to preserve.**
- **Current rural zoning is 2 acres per house.**

The state could employ a strong regulatory approach and down-zone these areas to 100 acre per house, while also enacting agricultural exclusion provisions. Since agricultural land pays little or no property tax currently because of the use-value assessment program (assumed), this down-zoning would have little or no fiscal impact. In the long-term if this land is never converted to a use that pays substantial property taxes, counties may not realize an increase in property taxes. This preservation technique can be reversed when the county council re-zones the land in the future. However, barring this eventuality, the state has preserved the maximum number of acres, preserved all productive farms, preserved them in a contiguous fashion, and ensured that the most threatened is not converted. In addition, the state retains the \$10 million which it can use to assist entering farmers purchase this land, it can subsidize productive investments in the agricultural sector including the input and processing industries, and it can employ a business consultant to increase profitability.

The state could also pursue a regulatory approach that is not so far reaching. Instead of down-zoning, it can institute a collection of regulatory programs that ensure that agricultural land uses enjoy preference relative to non-agricultural uses when conflicts between uses arise. This might include a strong-set of right-to-farm laws encompassing a large set of generally acceptable agricultural management practices (GAAMPs). This approach might be more acceptable to the agricultural community. Yet, it might require setting aside some of the \$10 million to defend against lawsuits. This might achieve the four goals outlined, but not as well or for as long as the stronger regulatory approach.

The state could invest the money in a purchase of development right program. If it prioritized preserving the most acres, it could preserve 8,333 acres (assuming \$1,200 per acre for the easement). If it prioritized those most close to developed areas where land cost \$20,000 per acre, the state could preserve 500 acres. While successful agricultural landowners like this type of program, many potential participants are excluded due to budget constraints. Unless careful attention is paid, this type of program also will not preserve land in a contiguous fashion. Minimum eligibility requirement can ensure that only productive farms are enrolled.

Using an installment program may allow the state to leverage the \$10 million enrolling threatened acres now and increasing the budget over the next 30 years. The state could also advocate capital gain tax forgiveness. For example, if the Internal Revenue Service would forgive 50 percent of the capital gains, Ms. Carter in Table 5 would receive more than \$30,000 additional money on her easement sale. The state could use part of its \$10 million to

compensate the federal government. It also may be able to offer a lower easement value to these landowners which would permit it to enroll more acres. This approach would increase the benefits of participating to long-time agricultural landowners as well as the benefits of selling an easement to the state instead of the land to a developer. Similarly, mortgage assistance or paying a few points on closing for purchasers who promise a certain number of years in an agricultural use would make a sale of agricultural land to another farmer more attractive than a sale to a developer. Impact fees could be used when farmland is converted to another use. This additional revenue could be added to the \$10 million to finance further farmland protection.

The state could establish a land-bank under which it purchases the farmland in fee. It could purchase 5,000 acres of low-threat agricultural land valued at \$2,000 per acre. It would then sever the development rights from the property and resell for its use value of \$1,000 per acre to generate \$5 million in revenue. This of course assumes that no expenses are incurred to operate the program. It can then use the \$5 million to purchase more land and the process will keep repeating until 10,000 acres of low-threat farmland are preserved. If the land-bank chooses to purchase properties closer to urbanizing areas, fewer parcels will be preserved as was mentioned above.

If the state invested a small amount of cash with farmers to obtain right of first refusal, say \$200 per farmer, and it seeks a contract with 500 landowners, this would cost \$100,000 to begin the program. The state could choose to engage only those landowners with the most threatened parcels. Then at the time when a farmer is made an offer to buy the land, he or she would inform the state. The state could

decide to exercise its right of first refusal and purchase the land fee simple or to not exercise it. The state does not have to make any expenditure outside of the contract signing fee then at the present time. Expenditures will be incurred only when there is demand for the farmland for alternative purposes. Once purchased the state could then sever the development rights and re-sell the land as described above. Land will be purchased until the \$10,000,000 is expended. Importantly, the longer the state waits to purchase the rights of first refusal, the more interest is gained on the stake, which ultimately increases the quantity of land protected—vis-à-vis a standard development rights or land-bank program

Right of first refusal could be linked to other programs such as agricultural district participation or use-value taxation to form a hybrid type of program. This would allow the state to shift more of the program expenses into the future since no up-front investment would be required.

Similarly, the costs of PDR could be compensated in-kind. Assume the state provided retirement annuity to any farmer who voluntarily donated their development rights to the state. If demand for the program exceeded available funds, parcel-quality ranking could be used to differentiate parcels. With \$10,000,000, the analysis in Table 8 shows that the state could provide a \$60,000 annual income for 20 years for 26 farm families in exchange for a conservation easement.⁹ This could potentially protect 5,200 acres if the average participating farm has 200 acres.

⁹ This assumes that farmers are 50 years old today, start their retirement income at 65, and stop earning this income at 85. The landowners would also be able to sell their preserved land in the market. There is no COLA in this analysis.

The state could set up a transfer of development rights program with agricultural areas as sending zones and designated growth areas as receiving zones. The developers would negotiate a price with the agricultural landowners to purchase rights to increase density in the growth area. Thus the new homeowners via the developers are paying the cost of the preservation of farmland. The state could use the \$10 million to subsidize the purchase of development rights for those agricultural acres closer to urbanizing areas. It could also invest in improving the quality of life of the homeowners in the receiving areas to avoid the NIMBY problem since current homeowners might resist being designated as a growth area. It could also use the money to increase the affordability of housing if needed. The number of acres preserved will depend on developers' desire for increased density which can vary for a variety of reasons.

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